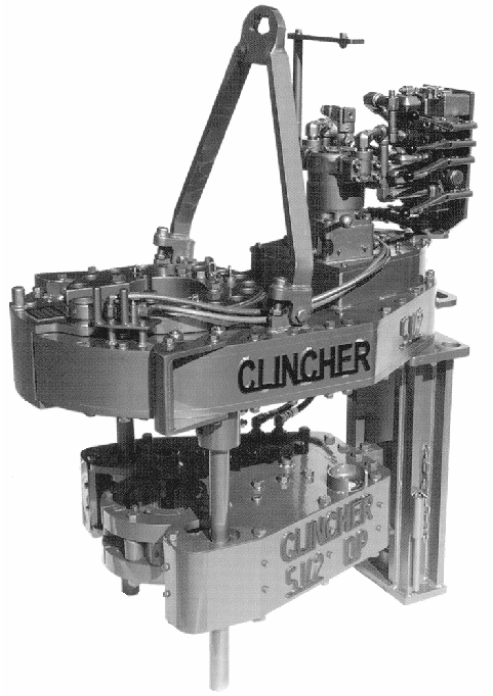
SUPERIOR
Manufacturing & Hydraulics

TECHNICAL MANUAL

5 1/2" CLINCHER® UHT TONG

AND

5 1/2" UHT BACKUP,
5 1/2" LOCKJAW™ DRILL PIPE BACKUP OR
6 1/4" UHT BACKUP



COVERS

TONG MODELS

CLE5500-15B / CLE5500-15C

BACKUP MODELS

BUC5500-01 / BUCD5500 / BUCDT5500 / BUC6250 & -02

HANGER ASSEMBLIES

BUC5511 / BUCD5600 / BUCT5508 / BUC6260

4225 Highway 90, East
Broussard, Louisiana 70518
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www.superior-manf.com

Published 01/2002

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The products described in this manual are covered by U.S. and foreign Patents and/or pending Patent Applications.

This manual is not a controlled document and is subject to revision without notice. To receive updates and insure you have access to the latest information concerning the 5 1/2" **CLINCHER®** UHT Tong and Backup, we request you complete this form and return the lower half to SUPERIOR Manufacturing and Hydraulics by mail or facsimile. Access to our manuals can also be acquired through our web site www.superior-manf.com. Select the tab '**CLINCHER®** Products', select the equipment from the list to get Specs page, select the tab 'Download Manual'.

Name: _____
Company: _____
Address: _____
Address: _____
City: _____ **State:** _____
Postal Code: _____ **Country:** _____
Telephone: _____ **Fax:** _____

Tong Model No.: _____ **Serial No.:** _____
Backup Model No.: _____ **Serial No.:** _____
Assembly Date: _____

- - - -

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5 1/2" CLINCHER® UHT TONG and 5 1/2" UHT BACKUP

REVISION TABLE

Section	*Page*	*Date*	*Description*
4	3 - 6	01/02	Removed assembly instructions for earlier model tools (previous generations).
7A	1 - 26	01/02	Removed Parts List's for earlier model tools & renumbered pages.
7B	1 - 20	01/02	Removed Parts List's for earlier model tools & renumbered pages.
9	1-4, 6, 8, 9, & 14	01/02	Removed parts referencing earlier model tools; Removed illustrations for previous generations: Dumbell Rollers 1st, 2nd, & 3rd, Shifting Gear 1st, Top & Bottom Cage Plates f/Models CLE5500-13 & -15, Bottom View w/Hanger BUC5511, Tong Doors 1st, 2nd, & 3rd; Renumbered pages.
10	1, 2, & 4	01/02	Removed parts referencing earlier model tools; Removed illustrations for previous generations: Top View f/BUC5500, Backup Cylinder 1st, Plumbing 1st Sh 1 & 2, Valve Bank 1st, Hyd. Schematic 1st; Renumbered pages.
2	3, 5, 6	04/02	Corrected & clarified Specs and Dimensional Dwgs.
3	11 - 12	04/02	Added Jaw Range Chart for Dovetail and Splined Jaws.
9	23	04/02	Revised Dwg. 5 1/2" UHT Tong Jaw Assembly
11	1	04/02	Revised Dwg. Lift Cyl. Assy. LCR100-B
N/A	Cover & Title Pg.	05/03	Added Tong Model CLE5500-15C, Backup Model BUC6250 & Hanger BUC6260
2	3 - 10	05/03	Revised Weight Spec for **LOCKJAW™** DP Backup. Added Specs & Dimens. Illustration f/ 5 1/2" UHT Tong w/ 6 1/4" UHT Backup
3	3	05/03	Added Die Nomenclature for BUC6250 UHT Backup
4	1	05/03	Corrected typo on chart title from **LOCKJAW™** Tong to UHT Tong.
7	1	05/03	Revised Spare Parts List
7A	1 - 34	05/03	Added Parts List's CLE5500-15C, 55001-03 & KITBOLT-04C, & renumbered pages. Revised Parts List's CLE5500-15B, 45091, SLV1000-01, KITBOLT-04
7B	1, 19 - 24	05/03	Added Parts List's BUC6250, BUC6204, BUC7632 & KITFIT-02. Revised Parts List's KITFIT-15A & KITFIT-15C.
7C	1, 5 - 8	05/03	Added Parts List's MK6250, BUC6260 & BUC6270. Revised Parts List's BUCD5600 & BUC5570-01
9	1, 3, 4, 8A, 8B, 13, 14A, 20, 21, & 22A	05/03	Added Illustrations Sealed Idler Bearing PN 1905, Installation for PN 1905, Motor Assy. (sht 2) & Hanger Bracket Assy. 55001-03. Revised Illustrations Top View (sht 1 & 2), Shifting Gear Assy., Brake Band Assy., & Side Handle Assy.
10	1, 8, 13, 16, 18-22	05/03	Added Illustrations BUC6250 6 1/4" UHT Backup, BUC6204 Cylinder Assy., BUC7632 Center Jaw Assy., & MK6250 6 1/4" Mounting Kit. Revised Illustrations Valve Bank Assy., 5 1/2" LJ DP Backup Top View w/o Top Plate, Outside Door Assy. f/BUCD5500, & 5 1/2" LJ DP Backup Mounting Kit Assy.
12	3 - 8	11/03	Replaced Totco Manual with Superior Compression Torque System.
2	5, 7, 9	03/04	Revised Spec charts.
3	0, 9-16	03/04	Added Dovetail Straight Tooth & Diamond Tooth Die information. Replaced charts Max. & Min. Adapter Gripping Diameter for BUDT55-XXXX DT Die Adapters for BUCD5500 & BUCD55XHT, with chart for 5 1/2" XHT Tong and chart for 5 1/2" LJ Backup for Drill Pipe. Tong has 3/8" min. undersized, LJ Backup for Drill Pipe has 1/4" min. undersized. Replaced Tech Update Rev.5.0 with Rev.6.0.
4	4	03/04	Corrected assembly instruction 15.
9	10	03/04	Revised illustration Secondary Gear Assembly.
7B	13-15	12/04	Revised Parts List BUCD5500.
7C	4	12/04	Revised Parts List BUC5570.
9	1, 5-6, 11-13, 17, 24-25	12/04	Revised Gear Housing Top View including High Gear Idler Assy. Removed pg. 12, High Gear Idler (was same as Gear Housing Top View). Revised Gear Train illustration, Encoder Assy., Shifting Gear Assembly, Bottom View, Low Friction Jaw Assy., & Dovetail Jaw Assy.
10	7-9, 12, 15-16	12/04	Revised illustrations Mounting Kit Assy. MK5500, Valve Bank Assy., Basic Hydraulic Schematic, LJ DP Backup Assy w/o Top Plate, Inside Door Assy., & Outside Door Assy.
12	1	12/04	Revised Torque Gauge Part Numbers, Torque Rating & Handle Length.

REVISION TABLE

Section	*Page*	*Date*	*Description*
Cover, Title Pg. 3	Cover Title Pg. 13-16	08/05	Removed ISO Emblems.
3	11	08/05	Revised P/N's for Splined Jaws 5 1/2 x 2 1/16 x 3 1/2 fine tooth steel dies from CLJ5501 to CLE5500 & **GRIT FACE™** dies BB5601 to BB5800.
7A	1-2, 29-30 14, 30.1	08/05	Revised size range for CJ-55B from 3 3/4" to 3 1/2" - 5 1/2". Added Parts List CJ-LF-55B. Revised Parts List 45091. Moved CJDT55-02875 to page 30.1.
9	1, 25 13, 24 26	08/05	Added size range for CJ-LF-55A. Added Illustration CJ-LF-55B. Revised Illustrations Shifting Gear Assy. 2nd Gen. & LF Jaw Assy. CJ-LF-55A. Renumbered page on Illustration 5 1/2" UHT Dovetail Jaw Assy.
14	9	08/05	Added Denison Dump Valve Illustration behind Tech. docs for PN 58058.
Cover Title Pg.	Cover Title Pg.	06/07	Added Backup BUCDT5500.
3	7-10	06/07	Corrected Doors on Die Adapter illustration for BUCD5500. Corrected Dovetail Die Chart, length of dies from 5" to 3 7/8".
7A-7C	all	06/07	Removed all Parts Lists.
9	4 & 24	06/07	Revised illustrations Top View sht2 and LF Jaw Assy. CJ-LF-55A.
10	1, 8, 12-16.2, 18.1	06/07	Added illustrations BUCDT5500 Assy. & w/o Top Plate, MKBUCT5500. Revised illustrations Valve Bank Assy., LJ DP Backup Assy. w/o Plate, Top View w/o Top Plate, Cylinder Assy. BUCD5524, Inside Door Assy. BUCD5536, Outside Door Assy. BUCD5535.
14	11-12	06/07	Added Dump Valve Electrical Connector Assembly.
3	9	12/07	Revised Tong Dovetail Die Chart.
9	26	12/07	Revised illustration Dovetail Jaw Assembly.
3	6 10	02/08	Added sizes 2 3/8" thru 5 1/4" using dovetail die adapters BUDT55-XXXX. Revised 5 1/2" uses BUCX55005500. Rev. LJ DP Backup DT Adapter/Die Chart.
10	1, 3, 9-10 17	02/08	Added Hyd. Sch. w/Manifold. Revised illustrations BUC5500-01 Top View, Basic Hyd. Sch., Backup Dovetail Die Adapter.
14	37-42	02/08	Added tech. info. for Valves PN 17-B3P0-002 & 17-B3P0-004.

5 1/2" CLINCHER® UHT Tong and Backup

HAZARD WARNING

Nomenclature used in this manual:

WARNING	concerns an operating procedure or practice that, if not strictly observed, can result in injury to personnel or loss of life
Caution	concerns an operating procedure or practice that, if not strictly observed, can result in damage to or destruction of equipment
Note	concerns an operating procedure or practice that needs highlighting

CLINCHER® UHT Tongs and Backups are manufactured to provide a means of making up or breaking out high torque tubular connections. They utilize high pressure hydraulic fluid power which can cause the tong to move suddenly and with great force if the tong is not properly rigged up and operated. **CLINCHER®** Tongs and Backups contain rotating and reciprocating parts which can severely or fatally injure personnel who are operating, repairing, or near this equipment during its operation. **WARNING: Tongs and Backups are not to be operated by untrained personnel or personnel with diminished physical or mental capacity. No work of any type, including changing of dies, is to be carried out while the tong and backup are connected to any hydraulic power unit.**

CLINCHER® UHT Tongs and Backups are heavy tools. They should be suspended from a secure, high strength 7/8" IWRC minimum diameter wire cable with a 31 ton minimum breaking strength. The wire rope should be hung as close to the center of the wellbore as possible, without interfering with drilling equipment operation, to allow the tong to be readily swung into the working position. Vertical position control should be achieved by means of a **CLINCHER®** hydraulically operated lift cylinder/spring hanger. **WARNING: Users must insure the entire suspension system including cables, rig mounting points, lift cylinders, tong lifting brackets/bridles, winches, pulleys, counter weights, etc., are capable of handling the static weight of the tong and backup plus any loads which could be transferred to it during the makeup or breakout process PLUS any shock loads which may be seen during operation. This system must readily allow downward movement equal to a minimum of the thread makeup distance to avoid overloading the suspension system and/or damage to equipment.**

A 1" IWRC minimum diameter wire cable with a 51.7 ton minimum breaking strength or better, should be attached at a 90 degree angle to the tong and at the same level to insure proper readout of torque indicator. A SNUBBING LINE should always be attached even when an integral backup is in use to provide additional safety in the event of a backup slippage. **WARNING: Users must provide a means of safely controlling the tong and backup movements in all directions when it is in use. Failure to account for its size, weight, movement and the amount of torque developed could result in personnel injury or death.**

5 1/2" CLINCHER® UHT Tong and Backup

HAZARD WARNING

CLINCHER® Tongs and Backups utilize high pressure hydraulic fluids. Portions of the tong and backup, control valves, hydraulic lines and cylinders may contain high pressure fluid even when the power unit is de-energized and the fluid supply hoses are disconnected. During normal operation the temperature of the hydraulic fluids as well as hoses, piping, valves, etc., can rise to a level which can cause burns. **WARNING: Personal protective gear including safety glasses, face shields, protective gloves and protective clothing must be worn to guard against the hazards of high pressure fluids. Tight fitting clothing is required to prevent entanglement in rotating components. These tools should be serviced by thoroughly trained and qualified hydraulic technicians using procedures to safely insure hydraulic pressure is bled from these circuits.**

The **CLINCHER®** UHT Tong is equipped with a door interlock system which prevents tong rotation whenever the door is open. This system is to be tested before each mobilization and at every shift change. Should this system be determined to be inoperative, the tong is to be removed from service and tagged as ***in-operative*** until repairs are made. **CAUTION:** Operating the tong with the door in the open position could result in severe damage to the equipment and will void all manufacturer warranties. **WARNING: Operating the tong with the door open by means of a defective or bypassed door interlock system exposes the operator and nearby personnel to potentially fatal hazards.**

No attempt should be made to operate the **CLINCHER®** UHT Tong and Backup for any purpose other than which it is intended. This system is capable of generating very large clamping forces and torsional loads which, if improperly applied or controlled, could result in damage to the tubular, to the tong and backup, or could possibly result in injury or death of personnel. Do not attempt to operate the unit without correct dies and the proper size tubular being in the tong and backup. See Section 3 for more information concerning the selection and use of dies.
CAUTION: Operating this equipment without the correct size, type, and orientation of dies can result in damage to the equipment or tubulars being handled.

HYDRAULIC PRODUCT SAFETY

WARNING: Valve lever (spool) may "stick" (not center) under certain conditions allowing the hydraulic equipment to continue to operate and could cause serious injury, death or equipment failure.

VALVE SAFETY: Read and follow instructions carefully. Failure to observe instructions and guidelines may cause serious injury, death or equipment failure. A sticking valve (spool bind) may be caused by one or more of the following factors:

DIRTY OIL: Oil must be filtered to a minimum of 25 microns. Filters should be changed regularly - spin-on types after 50 hours of initial use and then after every two hundred fifty hours of use. Use of a condition indicator is recommended. Consult your tractor or implement owner's manual for filtration and changing recommendations for internal systems.

OIL REQUIREMENTS: Premium quality anti-wear type oil with a viscosity between 100 and 200 SSU at operating temperatures. Certain synthetic oils may cause spool seals to swell and the valve to stick. If in doubt, call CROSS Engineering.

IMPROPER HOOK UP OR MOUNTING: Always use the proper size fittings. Hook up "in" & "out" as noted on the valve body. Do not overtorque pipe fittings. Mounting surfaces should be flat and care should be used when tightening mounting bolts. Over-tightened bolts can cause spool bind and casting breakage. When hooking a valve in series, always use a power beyond sleeve. Consult your tractor or implement manual to make sure you have the proper quick disconnect line connected to the inlet of the remote valve.

MISAPPLICATION: Always use the proper valve for the job. CONVERTA, CD, CS or CA valves should never be used for metered heavy load lifting - loaders or similar applications. Use an open center valve for open center applications and a closed center valve for closed applications. If in doubt, check with your tractor dealer. Contact CROSS if the valve allows the hydraulic equipment to creep excessively.

MAINTENANCE: Make sure all bolts are tightened and torqued to the recommended specification. Bent or broken parts should not be used. Replace immediately. Always use exact replacements. Always protect valve spool from paint overspray.

Faulty quick disconnects can cause high back pressures and sticking spools. Check quick disconnects periodically to make sure they are functioning properly. If valve spool does not center or appears to stick, do not use!

PUMPS & MOTORS SAFETY:

A relief or bypass in your hydraulic system is necessary to prevent pump from breakage due to overpressurization. Use correct fittings and proper oil as noted in the technical service manual packed with each unit. Change oil as recommended by your implement or tractor manufacturer.

CYLINDER SAFETY:

Check clevis clearances before, during and after extending the cylinder and before using the cylinder under pressure to avoid possible injury, or bent or broken rods caused by binding. Never operatea cylinder above recommended pressures. Never use a cylinder as a safety device when trans-porting equipment.

PINHOLE LEAKS:

If you observe a pinhole leak, discontinue use of the component. If oil has penetrated your skin or contacted your eye, seek medical attention immediately!

DESCRIPTION and APPLICATION

The **CLINCHER®** UHT Tong and Backup system is an "open-throat" design which can handle tubulars as small as 2 1/16 inches to as large as 5 1/2 inches in diameter. This system features two (2) jaws in the tong and three (3) jaws in the backup which encircle the pipe. Wrap around jaws and dies, combined with our low friction jaw technology, constant radial load cam system and compensating jaw design provide exceptional gripping capabilities with reduced pipe deformation, stress and marking. Using our non-marking aluminum die system or **GRIT FACE™** dies in the UHT Tong and Backup will now allow stainless steel corrosion resistant alloys (CRA) to be run as quickly and easily as a traditional tong runs conventional steel tubulars.

Notable Features and Benefits

Low Friction Jaws	increases cam angle efficiency to allow use of aluminum dies
Splined Die System	aligns the die with the tubular and more evenly distributes radial load, essentially wrapping the die around the tube reduces pipe stress, deformation and minimizes marking
Constant Cam Angle	insures an adequate radial load is available regardless of relative rotation to enhance performance on undersized pipe
Die Retention Method	provides an enhanced method of preventing equipment damage and die loss if the pipe is inadvertently moved while the tong or backup are still gripping the pipe

In addition to these unique features listed above, the **CLINCHER®** UHT Tong and Backup System is also equipped with numerous standard features including:

Door Interlock	prevents tong ring gear rotation whenever the tong door is open but allows control and operation of backup and lift cylinder at all times
Encoder Adapter	accepts customer's turns encoder to signal to a torque/turn computer
Pressure Control Valve	adjustable pressure control valves allow the customer to limit the amount of pressure applied and torque developed
Tong Handles with Closed Covers	protects operators hands

The features described above are covered by US and foreign patents or pending US and foreign patents.

DESCRIPTION and APPLICATION

TONG APPLICATION

After completing the make-up or break-out cycle, the jaws are opened by reversing the tong motor to drive the ring gear and cam surfaces in the opposite direction until the reversing pin contacts the ring gear shoulder. Springs are used to return the jaws to their fully open position.

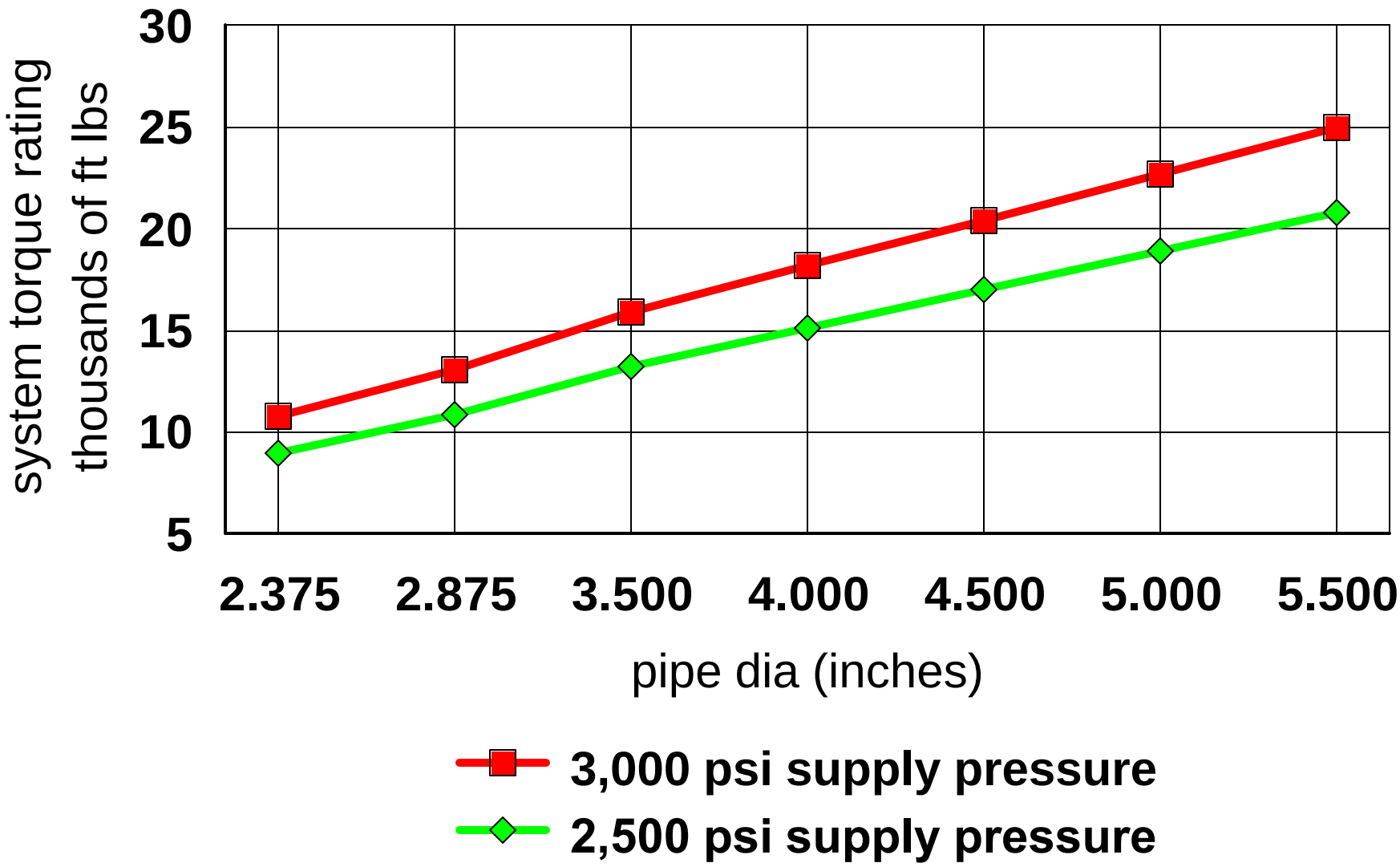
BACKUP APPLICATION

The **CLINCHER®** UHT Backup's front jaws are hydraulic cylinders. During a jaw closing cycle, the front jaws advance and clamp the pipe against the fixed rear jaw. Once locked on the pipe, pressure is locked in the backup cylinder by a load holding valve. When opening, the front jaws retract to allow the pipe to be removed.

The **CLINCHER®** UHT **LOCKJAW™** Backup has an "open throat" design with three jaws that encircle the pipe. The front jaws are operated by cam surfaces on the rear jaw cylinder. During a jaw closing cycle, the front jaws swing in and interlock as the rear die approaches the pipe. Once locked on the pipe, pressure is locked in the backup cylinder by a load holding valve. When opening the backup jaws, the cylinder operation is reversed to retract the rear die and unlock the jaws. Springs move the front jaws to their fully open position.

CLINCHER® CLE5500-15B UHT Tong and BUC5500 Backup performance

when dressed with fine tooth wrap-around steel dies



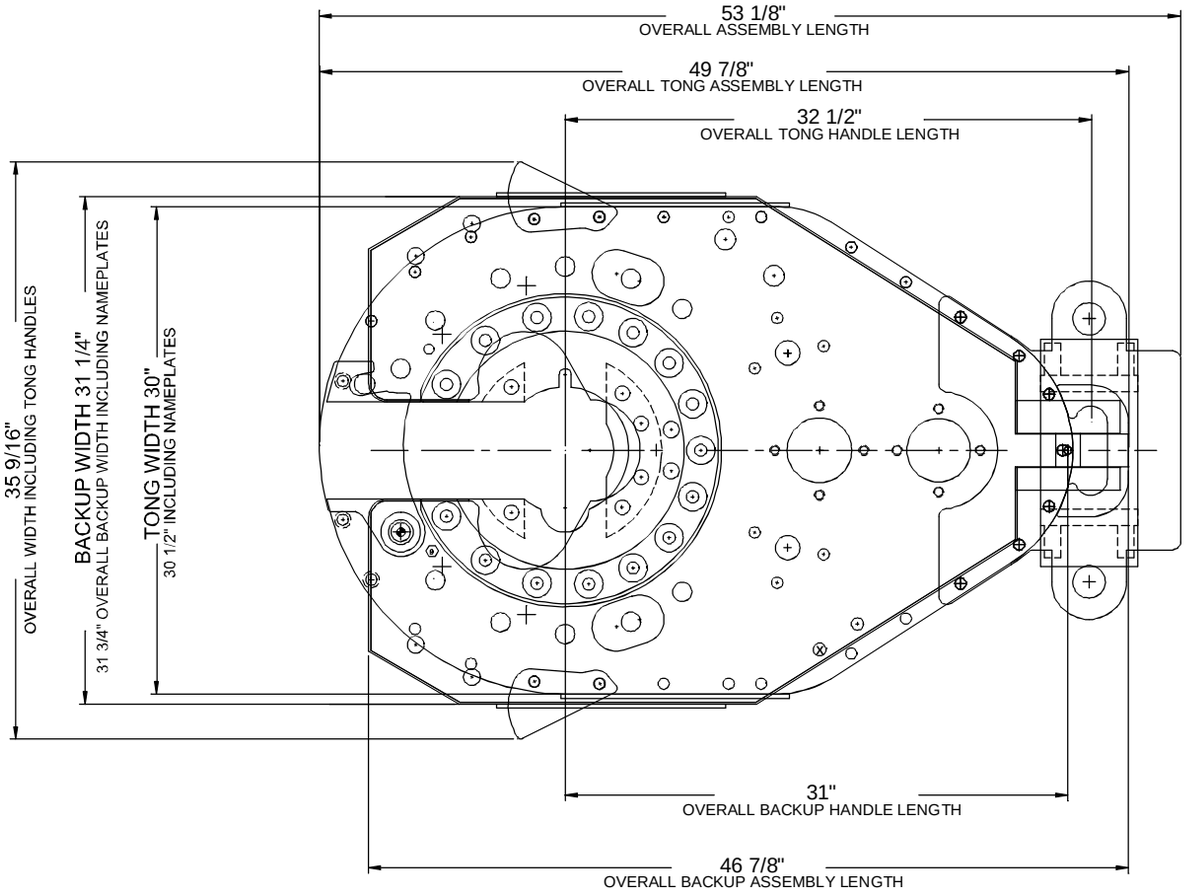
SPECIFICATIONS

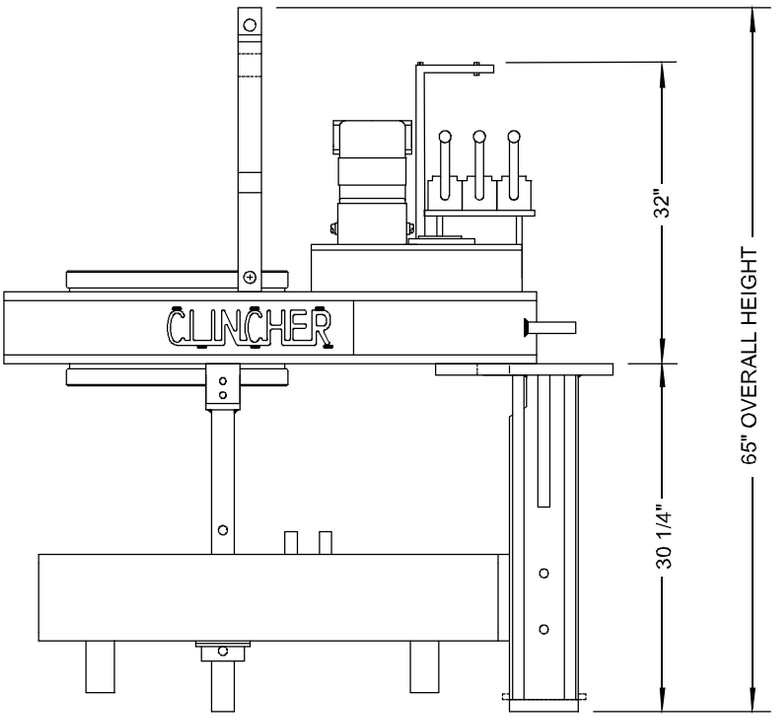
Maximum Torque	25,000 ft.lbs./33,895 Nm
Maximum Operation Pressure	3,000 psi/207 Bar
RPM @ 35 GPM/133 LPM: Manual Gearbox **Max Allowable Flow Rate: 40 GPM/151 LPM** **(Using Standard A-20 Valve Package)** **Max Allowable Flow Rate: 60 GPM/227 LPM** **(Using Optional A-35 Valve Package)** **High** **Low**	 45 8
Handle Length 5 1/2" UHT Tong	32 1/2"/82.6 cm
Handle Length 5 1/2" UHT Backup	31"/78.7 cm
Overall Length 5 1/2" UHT Tong & 5 1/2" UHT Backup	53 1/8"/134.9 cm
Overall Width w/ Handles **Overall Width w/o Handles / UHT Tong & 5 1/2" UHT Backup**	35 1/2"/90.2 cm 31 3/4"/80.6 cm
Overall Height w/ 5 1/2" UHT Backup & Load Cell Bracket	62 1/4" / 158.1 cm
Overall Height w/ 5 1/2" UHT Backup & Lifting Bracket	65" / 165.1 cm
Weight Tong (approximate) **Weight 5 1/2" UHT Backup (approximate)** **Bottom Hanger (approximate)** **Tong Legs (approximate)** **Combined Weight Tong w/ 5 1/2" UHT Backup w/ Hanger & Legs (approximate)**	1,775 lbs./ 805.1 kg 800 lbs./ 362.9 kg 225 lbs. / 102.1 kg 50 lbs. / 22.7 kg 2,850 lbs./ 1,292.7 kg
Tong Jaw Options	2 1/16" thru 3 1/2" LF 3 1/2" thru 5" 3 1/2" thru 5 1/2"
1 Backup Jaw Size	2 1/16" thru 5 1/2"
Gripping Range for Dovetail Tong Jaws (under nominal jaw or adapter sizes)	3/8" / 1.5 cm undersize

Operates using Steel Tooth Wrap Around Dies, **GRIT FACE™** Wrap Around Dies and Aluminum Wrap Around Dies

Standard Equipment:
- Door Interlock
- Self Adjusting Brake

Optional Equipment:
- Two Speed Hydraulic Motor
- Hydraulic Cage Plate Brake System
- Handles Tong & Backup
- Hydraulic Intensifier for Backup
- Varying Outlets for Torque Turns Computer Sending Units
- 3 Point Lifting Bridle
- Electronic Solenoid Dump Valve
- Shipping Stand, or Skid





5 1/2" UHT TONG & BACKUP DIMENSIONS

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REV. #	LOG #	DATE
1		04/19/02

REF: S:\Equip Manuals-Dwgs\CLE5500\Dimensions UHT rev1.wpg

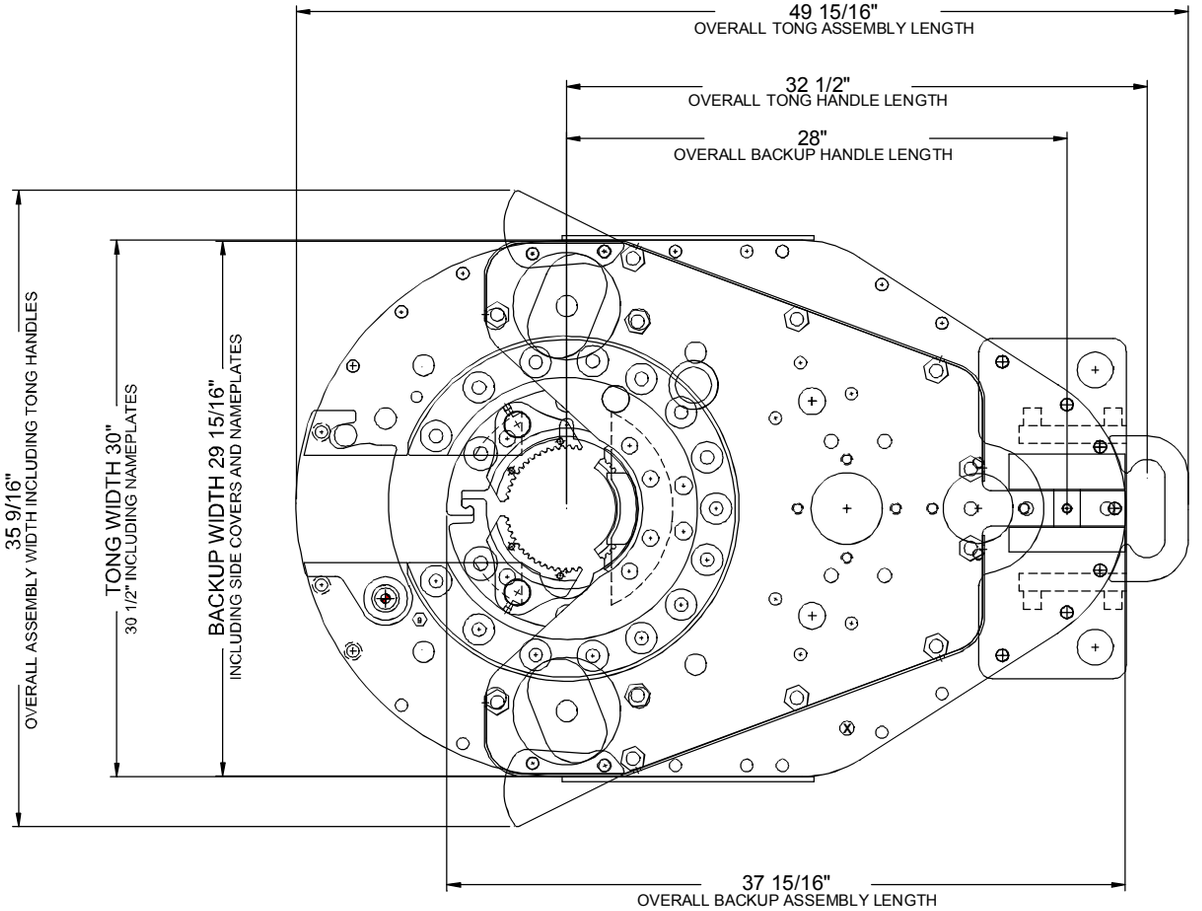
SPECIFICATIONS

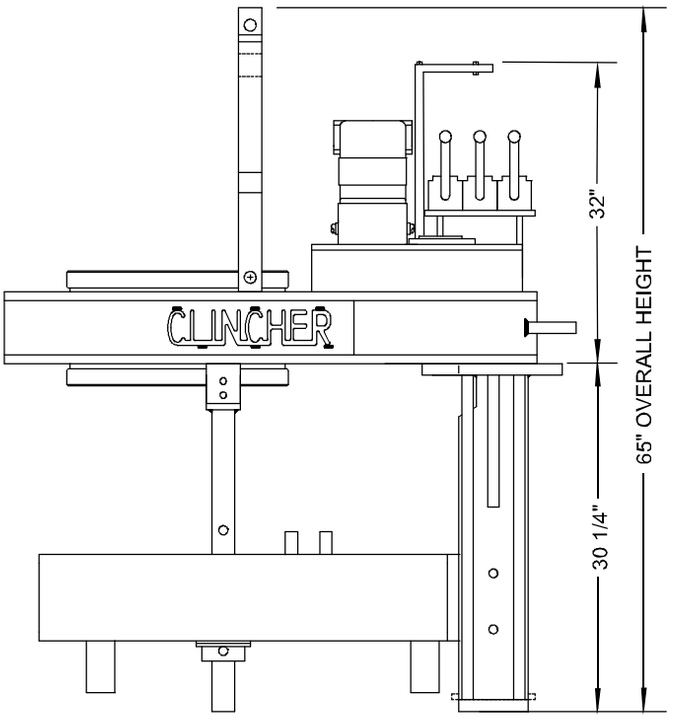
Maximum Torque	25,000 ft.lbs./33,895 Nm
Maximum Operation Pressure	3,000 psi/207 Bar
RPM @ 35 GPM/133 LPM: Manual Gearbox **Max Allowable Flow Rate: 40 GPM/151 LPM** **(Using Standard A-20 Valve Package)** **Max Allowable Flow Rate: 60 GPM/227 LPM** **(Using Optional A-35 Valve Package)** **High** **Low**	 45 8
Handle Length 5 1/2" UHT Tong	32 1/2"/82.6 cm
Handle Length 5 1/2" LOCKJAW™ DP Backup	28"/71.1 cm
Overall Length 5 1/2" UHT Tong & 5 1/2" LJ DP Backup	50"/127 cm
Overall Width w/ Handles **Overall Width w/o Handles / UHT Tong & LJ DP Backup**	35 1/2"/90.2 cm 30 1/2"/77.5 cm
Overall Height w/ LJ DP Backup & Load Cell Bracket	62 1/4" / 158.1 cm
Overall Height w/ LJ DP Backup & Lifting Bracket	65" / 165.1 cm
Weight Tong (approximate) **Weight 5 1/2" LOCKJAW™ DP Backup (approximate)** **Bottom Hanger (approximate)** **Tong Legs (approximate)** **Combined Weight Tong w/ 5 1/2" LJ DP Backup w/ Hanger & Legs (approximate)**	1,775 lbs./ 805.1 kg 875 lbs./ 398.0 kg 225 lbs. / 102.1 kg 50 lbs. / 22.7 kg 2,925 lbs./ 1,326.8 kg
Tong Jaw Options	2 1/16" thru 3 1/2" LF 3 1/2" thru 5" 3 1/2" thru 5 1/2"
1 Backup Jaw Size	2 1/16" thru 5 1/2"
Gripping Range for Dovetail Tong Jaws (under nominal jaw or adapter sizes)	3/8" / 1.5 cm undersize
Gripping Range for LOCKJAW™ DP Backup dressed with Dovetail Adapters	1/4" / 0.6 cm undersize

Operates using Steel Tooth Wrap Around Dies, **GRIT FACE™** Wrap Around Dies and Aluminum Wrap Around Dies

Standard Equipment:
- Door Interlock
- Self Adjusting Brake

Optional Equipment:
- Two Speed Hydraulic Motor
- Hydraulic Cage Plate Brake System
- Handles Tong & Backup
- Hydraulic Intensifier for Backup
- 3 Point Lifting Bridle
- Electronic Solenoid Dump Valve
- Shipping Stand, or Skid
- Varying Outlets for Torque Turns Computer Sending Units





5 1/2" UHT TONG & LOCKJAW™ DRILL PIPE BACKUP DIMENSIONS

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847

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REV. #	LOG #	DATE
1		04/19/02

REF: S:\Equip Manuals-Dwgs\CLE5500\Dimensions LJ DP rev1.wpg

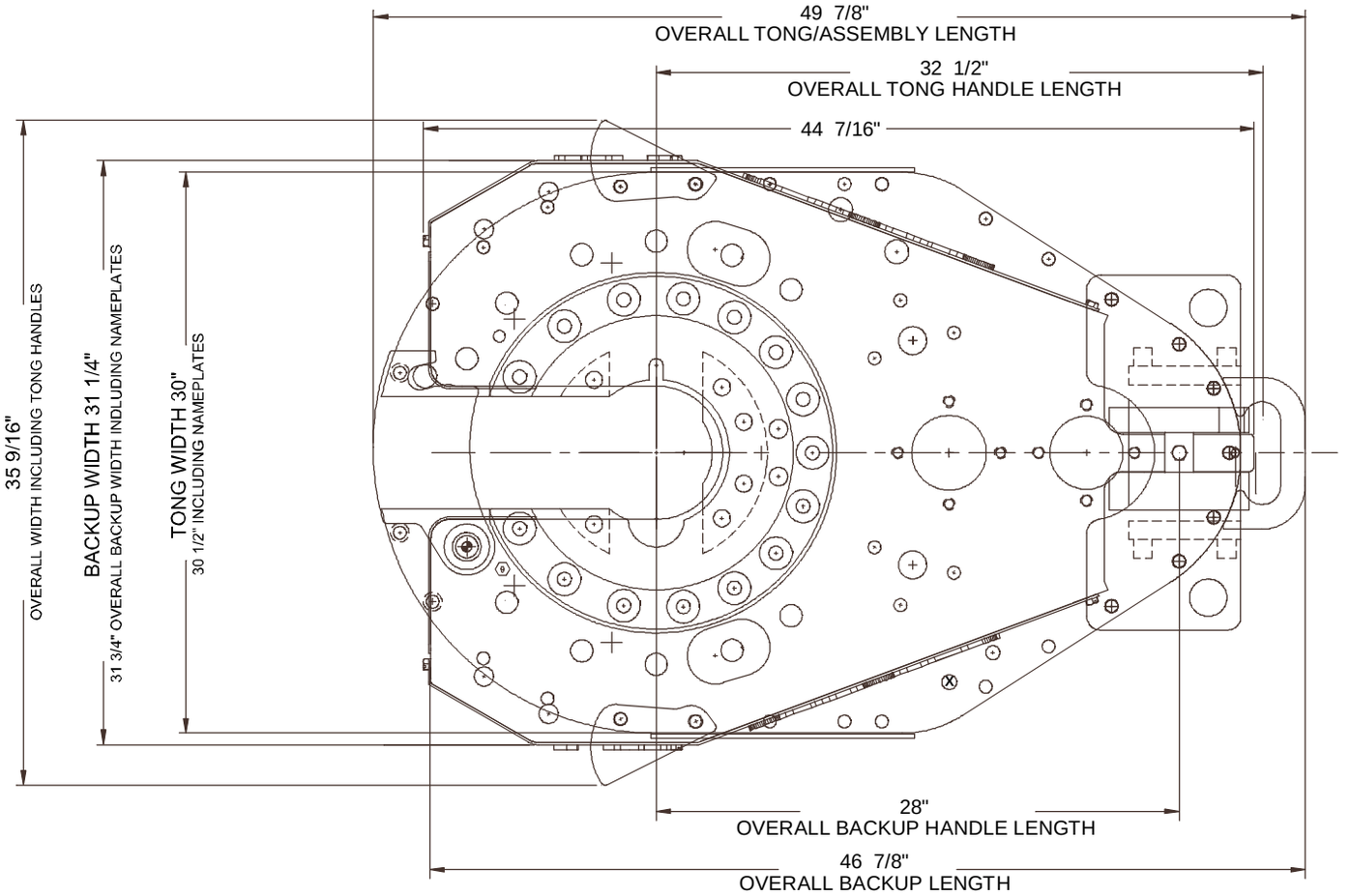
SPECIFICATIONS

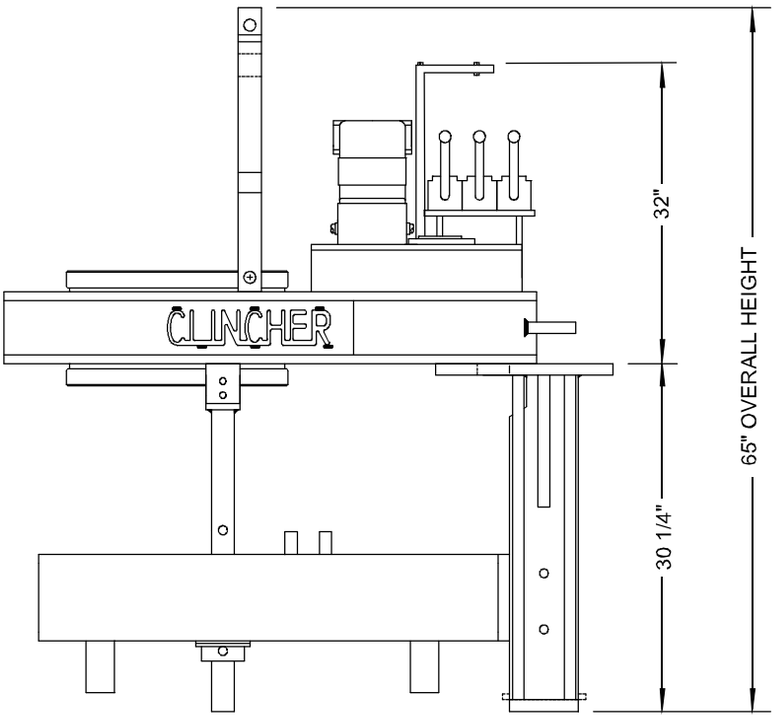
Maximum Torque	25,000 ft.lbs./33,895 Nm
Maximum Operation Pressure	3,000 psi/207 Bar
RPM @ 35 GPM/133 LPM: Manual Gearbox **Max Allowable Flow Rate: 40 GPM/151 LPM** **(Using Standard A-20 Valve Package)** **Max Allowable Flow Rate: 60 GPM/227 LPM** **(Using Optional A-35 Valve Package)** **High** **Low**	 45 8
Handle Length 5 1/2" UHT Tong	32 1/2"/82.6 cm
Handle Length 6 1/4" UHT Backup	28"/71.1 cm
Overall Length 5 1/2" UHT Tong & 6 1/4" UHT Backup	49 7/8"/126.7 cm
Overall Width w/ Handles **Overall Width w/o Handles / UHT Tong & 6 1/4" UHT Backup**	35 1/2"/90.2 cm 31 3/4"/80.6 cm
Overall Height w/ 6 1/4" UHT Backup & Load Cell Bracket	62 1/4" / 158.1 cm
Overall Height w/ 6 1/4" UHT Backup & Lifting Bracket	65" / 165.1 cm
Weight Tong (approximate) **Weight 6 1/4" UHT Backup (approximate)** **Bottom Hanger (approximate)** **Tong Legs (approximate)** **Combined Weight Tong w/ 6 1/4" UHT Backup w/ Hanger & Legs (approximate)**	1,775 lbs./ 805.1 kg 665 lbs./ 301.6 kg 237 lbs. / 107.5 kg 74 lbs. / 33.6 kg 2,750 lbs./ 1,247.4 kg
Tong Jaw Options	2 1/16" thru 3 1/2" LF 3 1/2" thru 5" 3 1/2" thru 5 1/2"
1 Backup Jaw Size	2 1/16" thru 6 1/4"
Gripping Range for Dovetail Tong Jaws (under nominal jaw or adapter sizes)	3/8" / 1.5 cm undersize

Operates using Steel Tooth Wrap Around Dies, **GRIT FACE™** Wrap Around Dies and Aluminum Wrap Around Dies

Standard Equipment:
- Door Interlock
- Self Adjusting Brake

Optional Equipment:
- Two Speed Hydraulic Motor
- Hydraulic Cage Plate Brake System
- Handles Tong & Backup
- Hydraulic Intensifier for Backup
- Varying Outlets for Torque Turns Computer Sending Units
- 3 Point Lifting Bridle
- Electronic Solenoid Dump Valve
- Shipping Stand, or Skid





5 1/2" UHT TONG & 6 1/4" UHT BACKUP DIMENSIONS

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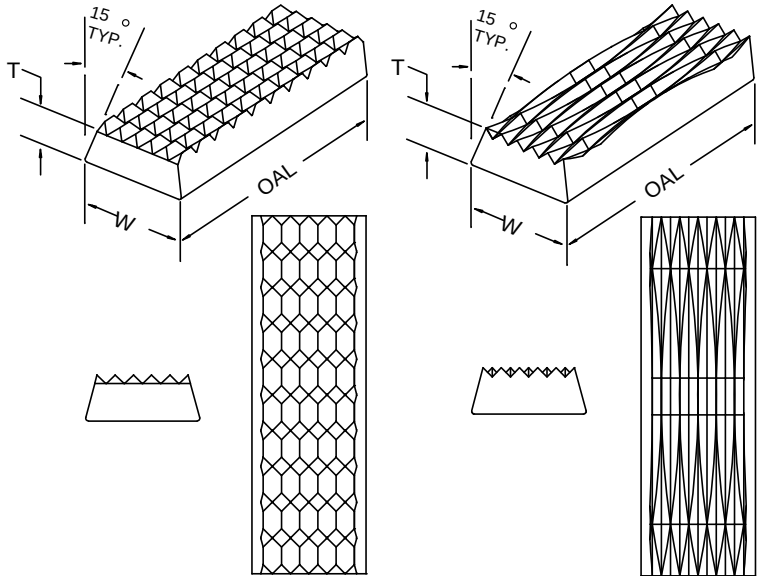
REV. #	LOG #	DATE
		05/09/03

REF: S:\Equip Manuals-Dwgs\BUC6250\Dimensions.wpg

CLINCHER® DIES

Many **CLINCHER®** Tongs and Backups utilize jaws and/or adapters which accept Dovetail Inserts (AKA Pencil Dies or Strip Dies) to effectively grip tubulars. Jaw systems and jaw adapters are also available which accommodate Wrap-Around Fine Tooth Steel Dies, **GRIT FACE™** Dies and Aluminum Dies.

The appropriate jaws, die adapters and dies required for a specific tubular OD are also described in this section of the manual.



STRAIGHT TOOTH **DIAMOND TOOTH**

> ***Note:*** Diamond Tooth Dies are used when a more aggressive bite is required.

Thickness	Width	OAL	P/N Straight Tooth	P/N Diamond Tooth
5/16	5/8	3 1/2	✶	✶
5/16	5/8	3 7/8	DTI4052	✶
5/16	5/8	4 1/2	DTI4002	✶
3/8	5/8	3 1/2	DTI4030	✶
3/8	5/8	3 7/8	DTI4051	✶
3/8	5/8	4 1/2	DTI4001	✶

Thickness	Width	OAL	P/N Straight Tooth	P/N Diamond Tooth
17/32	5/8	3 1/2	DTI4031	✶
17/32	5/8	3 7/8	DTI4053	✶
17/32	5/8	4 1/2	DTI4003	✶
5/8	5/8	3 1/2	DTI4032	✶
5/8	5/8	3 7/8	DTI4054	✶
5/8	5/8	4 1/2	DTI4004	✶
11/16	5/8	3 7/8	DTI4055	✶
11/16	5/8	4 1/2	DTI4005	✶
3/8	1	3 7/8	DTI1505	✶
3/8	1 1/4	3 7/8	DTI1614	✶
3/8	1 1/4	5	DTI1610	✶
7/16	1 1/4	3 7/8	DTI1612	DTI1612D
7/16	1 1/4	5	DTI1617	DTI1617D
1/2	1 1/4	3 7/8	DTI1601	DTI1601D
1/2	1 1/4	5	DTI1602	DTI1602D
9/16	1 1/4	3 7/8	DTI1622	DTI1622D
9/16	1 1/4	5	DTI1623	DTI1623D
5/8	1 1/4	3 7/8	DTI1632	DTI1632D
5/8	1 1/4	5	DTI1633	✶
11/16	1 1/4	3 7/8	DTI1642	✶
11/16	1 1/4	5	DTI1646	✶
3/4	1 1/4	3 7/8	DTI1651	✶
3/4	1 1/4	5	DTI1693	✶
3/4	1 1/4	5 7/8	DTI1662	DTI1662D
13/16	1 1/4	3 7/8	DTI1661	✶
13/16	1 1/4	5	DTI1664	✶
7/8	1 1/4	3 7/8	DTI1671	✶
7/8	1 1/4	5	DTI1673	✶
1	1 1/4	3 7/8	DTI1691	✶
1	1 1/4	5	DTI1697	✶

✶ Available upon request.

CLINCHER® WRAP AROUND DIES

CLINCHER® Wrap Around Dies are available in three types:

Fine Toothed Steel Dies:	for low to ultra high torque applications on carbon steel tubulars including tubing, casing, and drill pipe
Smooth Faced Aluminum Dies:	for low to moderate torque applications on fiberglass and corrosion resistant alloy (stainless steel) tubulars
GRIT FACE™ Dies:	for low to high torque applications on fiberglass and corrosion resistant alloy (stainless steel) tubulars where the use of steel dies is prohibited as well as on carbon steel tubulars where reduced marking is desired

CLINCHER® Dies are designed to match the OD of the tubing, casing, coupling, or accessory being made up or broken out. Each die is stamped on the top or side to identify its size. Using Fine Toothed Steel Dies which are slightly larger than the tubular is acceptable provided the difference in diameters is less than 3/32" (0.093"). Aluminum and **GRIT FACE™** Dies should be matched with the specific tubular diameters required. **Note:** The use of improperly sized dies can result in reduced torque capacity, increased pipe marking, and reduced die life.

CAUTION: Do not attempt to grip tubular diameters which are larger than the dies being used. Failure to observe this precaution can result in damage to the tubular or tong jaws.

In emergencies where correct die sizes are unavailable, some operators have successfully used two different sizes of dies to accommodate unusual, nonstandard diameters.

CLINCHER® Wrap Around Dies are manufactured in specific diameters to match standard tubing and casing diameters, API coupling diameters, selected work string connection diameters and certain commonly used premium connection coupling diameters. **CLINCHER®** Wrap Around Dies should not be used on tubulars which are larger than the nominal die size. Steel Toothed Dies can be used on tubulars which are no smaller than 3/32" (0.093") less than the nominal die size. Aluminum and **GRIT FACE™** Dies should be matched with the specific tubular diameters required.

Note: Fine Toothed Steel Dies are normally stocked in our Broussard, Louisiana facility. A partial listing of commonly manufactured sizes is shown below. Aluminum and **GRIT FACE™** Dies are normally made to order although a limited range of sizes and small quantities may be available from stock. Contact SUPERIOR Manufacturing & Hydraulics for information concerning availability of stock and special die sizes.

CLINCHER® WRAP AROUND DIES

DIE Nomenclature for CLE5500 UHT Tong and BUC5500 UHT Backup

CLE5500-xxxx	Fine Toothed Steel dies for jaws (2 reqd per tong)
BUC5500-xxxx	Fine Toothed Steel dies for jaws (3 reqd per backup)
BUCX5500-xxxx	Coarse Tooth Steel dies for jaws (3 reqd per backup)
CLEA5500-xxxx	Aluminum dies for jaws (2 reqd per tong)
CLFA5500-xxxx	Aluminum dies for Low Friction jaws (2 reqd per tong)
BUCA5501-xxxx	Aluminum dies for jaws (3 reqd per backup)
BB5800-xxxx	**GRIT FACE™** dies for jaws (2 reqd per tong)
BB5700-xxxx	**GRIT FACE™** dies for jaws (3 reqd per backup)
BBT5700-xxxx	**GRIT FACE™** dies w/teeth for jaws (2 reqd per tong, 3 reqd per backup)

ORDERING EXAMPLE: fine toothed steel dies are needed to run 2 7/8" OD tubing
Qty. two (2) CLE5500-2875 dies for jaws
Qty. three (3) BUC5500-2875 dies for jaws
(replace xxxx with size required in inches)

CLE5500-xxxx: Fine Toothed steel dies for UHT Tong

2.062 2.375 2.875 3.000 3.062 3.125 3.250 3.375 3.437 3.500 3.625 3.688 3.750
3.875 4.000 4.125 4.250 4.375 4.500 4.562 4.625 4.687 4.750 4.812 4.875 4.900
5.000

BUC5500-xxxx: Fine Toothed steel dies for UHT Backup

1.750 2.062 2.375 2.697 2.700 2.875 3.000 3.062 3.125 3.220 3.230 3.250 3.375
3.437 3.500 3.625 3.668 3.687 3.750 3.830 3.875 4.000 4.053 4.125 4.250 4.312
4.375 4.500 4.562 4.625 4.687 4.750 4.812 4.875 4.900 5.000 5.125 5.250 5.500
5.563

BUCX5500-xxxx Coarse Tooth steel dies for UHT Backup

5.500

CLEA5500-xxxx: Aluminum dies for UHT Tong

2.375 2.875 3.500 3.951 4.000 4.025 4.053 4.069 4.500 5.000 5.500

CLFA5500-xxxx: Aluminum dies for UHT Tong Low Friction Jaws

2.063 2.375 2.875 3.250 3.297 3.500 3.910 4.000 4.053 4.200 4.250 4.313 4.500
5.000 5.500

CLINCHER® WRAP AROUND DIES

BUCA5500-xxxx: Aluminum dies for UHT Backup
2.375 2.875 3.125 3.230 3.250 3.295 3.297 3.327 3.354 3.397 3.500 3.668 3.700
3.750 3.875 3.878 3.910 3.950 4.000 4.025 4.053 4.060 4.069 4.100 4.125 4.200
4.250 4.313 4.450 4.500 4.625 4.950 5.000 5.125 5.500 5.550

BB5800-xxxx: **GRIT FACE™** dies for UHT Tong
2.062 2.375 2.875 3.125 3.375 3.500 4.000 4.125 4.250 4.500 4.625 4.750 5.000

BB5700-xxxx: **GRIT FACE™** dies for UHT Backup
2.375 2.875 3.125 3.250 3.375 3.500 3.625 3.687 3.878 3.900 4.000 4.053 4.125
4.450 4.500 4.750 4.950 5.000 5.500

BBT5700-xxxx: **GRIT FACE™** dies w/teeth for UHT Tong and Backup
3.500 4.000 4.125 4.250 4.500

DIE Nomenclature for BUC6250 UHT Backup

BUC7625-xxxx	Fine Toothed Steel dies for jaws (3 reqd per backup)
BUCA7625-xxxx	Aluminum dies for jaws (3 reqd per backup)
BB7625-xxxx	**GRIT FACE™** dies for jaws (3 reqd per backup)

BUC7625-xxxx: Fine Toothed steel dies for UHT Backup
2.375 2.600 2.700 2.707 2.875 3.000 3.062 3.125 3.230 3.240 3.250 3.375 3.400
3.500 3.625 3.668 3.750 3.862 3.875 3.886 3.900 3.910 3.941 4.000 4.025 4.053
4.125 4.250 4.375 4.500 4.530 4.625 4.750 4.892 4.900 4.921 4.935 4.961 5.000
5.125 5.150 5.215 5.250 5.290 5.313 5.470 5.500 5.530 5.563 5.570 5.587 5.620
5.750 5.780 5.826 5.875 6.000 6.035 6.050 6.051 6.075 6.100 6.125 6.150 6.250

BUCA7625-xxxx: Aluminum dies for UHT Backup
1.900 2.250 2.375 2.400 2.679 2.707 2.735 2.776 2.875 2.910 3.125 3.130 3.230
3.240 3.300 3.327 3.375 3.400 3.500 3.523 3.590 3.875 3.900 3.950 4.000 4.053
4.069 4.138 4.200 4.250 4.313 4.460 4.500 4.600 4.620 4.862 4.968 5.000 5.012
5.150 5.350 5.500 5.550 5.563 5.577 5.590 5.650 5.653 5.700 5.750 5.890 5.960
6.000 6.025 6.050 6.051 6.075 6.100 6.125 6.135 6.150 6.153 6.156 6.170 6.200
6.250

BB7625-xxxx: **GRIT FACE™** dies for UHT Backup
2.375 2.875 3.250 3.500 3.878 3.900 4.000 4.053 4.250 4.500 4.750 4.901 4.950
5.000 5.200 5.500 5.563 5.577 5.736 5.890 6.000 6.045 6.050 6.051 6.075 6.079
6.100 6.150 6.180 6.240 6.248

Contact SUPERIOR Manufacturing & Hydraulics for information concerning availability of stock and special die sizes.

BUCD5500 5 1/2" LOCKJAW™ BACKUP FOR DRILL PIPE

The BUCD5500 **LOCKJAW™** Backup is a dual purpose tool intended for use on drill pipe and OCTG tubular goods. This operational flexibility is achieved through a combination of a "long stroke" rear clamping cylinder, compensating front jaws and dovetail die adapters or wrap around dies.

When used in the drill pipe mode with pipe larger than 5 1/4" OD up to 5 1/2" OD, wrap around dies must be used. The maximum dovetail die adapter can be as large as 5 1/4" in diameter. When used with dovetail die adapters and strip dies, the BUCD5500 can be used on tool joints which are as much as 1/4" smaller than the nominal size of the dovetail die adapter. The dovetail die adapters have been specially modified to insure adequate clearance exists between the die adapter in the clamping cylinder and the die adapter in the front jaws even when the "long stroke" capability of the clamping cylinder is extended to clamp on undersized pipe. The compensating front jaws are spring loaded and capable of moving to insure proper contact with undersized tool joints when dovetail die adapters are used. Note: Wrap around dies are not intended for use with undersized tubulars. The dovetail die adapters used with the BUCD5500 **LOCKJAW™** Backup for Drill Pipe can be readily identified by their part number:

BUDT55-XXXX where XXXX equals the nominal size
For example, if XXXX is 0500 this adapter is set up for 5.00" OD tool joints.

The splines used to hold the dovetail die adapter in the jaw is the same diameter as the splines used on BUC5500 **CLINCHER®** 5 1/2" UHT Backups and Dies. However, the dovetail die adapters used with the BUCD5500 **LOCKJAW™** Backup for Drill Pipe have 15 teeth on their OD compared to the 17 teeth on the OD of the BUC5500 UHT dies.

DIE INSTALLATION PROCEDURES (REFER TO ILLUSTRATION)

The "long stroke" cylinder in this tool must **not** be fully extended when changing dies to avoid interference with dies in the compensating front jaws. The following procedures are recommended for changing dies. Slowly close BUCD5500 **LOCKJAW™** until jaws are fully latched but do not allow rear clamping cylinder to extend out anymore than is required to remove the top die retaining clip. Shut off power unit, bleed off all trapped pressures and disconnect supply and return hoses.

WARNING: Failure to shut off power unit, bleed off trapped pressure and disconnect supply and return hoses may expose personnel to moving parts which will cause serious injury or death.

CAUTION: Fully closing the LOCKJAW™ Backup without correct sized dies and tubulars in place will result in equipment damage.

BUCD5500 5 1/2" LOCKJAW™ BACKUP FOR DRILL PIPE

When installing BUDT55-XXXX dovetail die adapters and BUC5500-XXXX wrap around dies it is critical the dies or die adapters used in the front compensating jaws be installed so that their front edge is flush with the edge of the compensating jaw closest to the "**LOCKJAW™** door hooks". The back edge of the dovetail die adapter will line up with the edge of the compensating jaw furthest away from the "**LOCKJAW™** door hooks". When wrap around dies are installed, the back edge of the die will extend beyond the edge of the compensating jaw which is furthest away from the "**LOCKJAW™** door hooks". The difference between these two die systems is the clearance required when the dovetail die adapter is used with undersized tool joints.

Remove upper clip bolts, upper clip and die from rear clamping jaw. Install appropriate wrap around die or dovetail die adapter. Rear die should be centered in rear jaw. Reinstall upper clip and clip bolts. Lubricate clip bolts with Never-Seez or equivalent. Tighten bolts securely to approximately 38 ft lbs.

Remove upper clip bolts, upper clips and dies from compensating front jaws. Install appropriate wrap around die or dovetail die adapter. Reinstall upper clips and clip bolts. Lubricate clip bolts with Never-Seez or equivalent. Tighten bolts securely to approximately 38 ft lbs.

Reconnect supply and return hoses. Restart power unit. Fully open backup and tubular with OD compatible with dies. Close backup and clamp on pipe. Visually confirm door is fully closed and locked and that all dies are gripping uniformly.

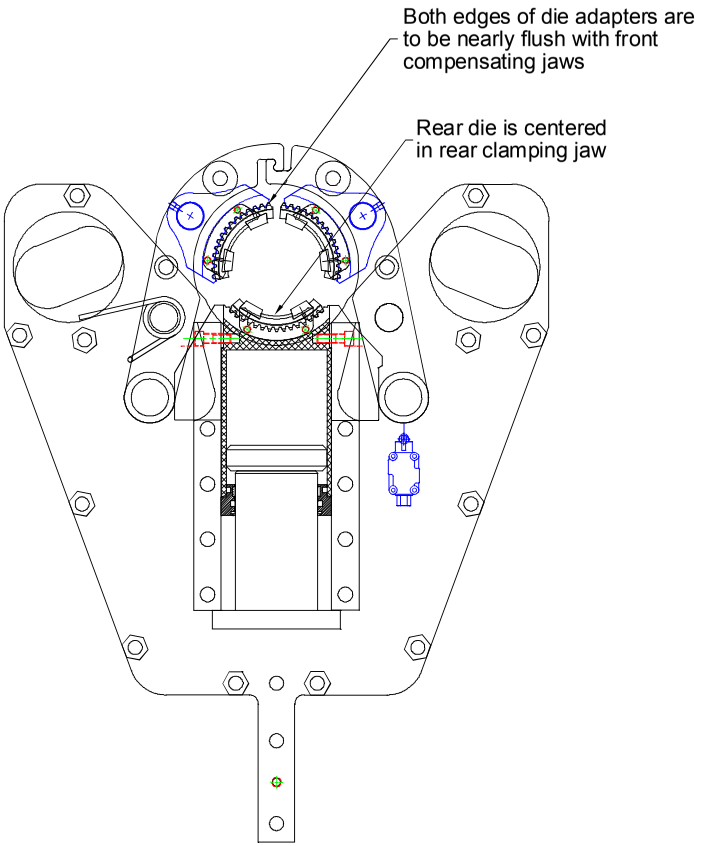
DIES, DIE RETAINERS AND DIE RETAINER CLIPS

The BUCD5500 **LOCKJAW™** Backup for Drill Pipe is a versatile tool which can be used on drill pipe and OCTG tubular goods. It accepts dovetail die adapters (BUDT55-XXXX 2 3/8" thru 5 1/4") (BUCX55005500 5 1/2") described above, wrap around fine tooth steel dies (BUC5500-XXXX), wrap around **GRIT FACE™** dies (BB5700-XXXX) or wrap around aluminum dies (BUCA5500-XXXX).

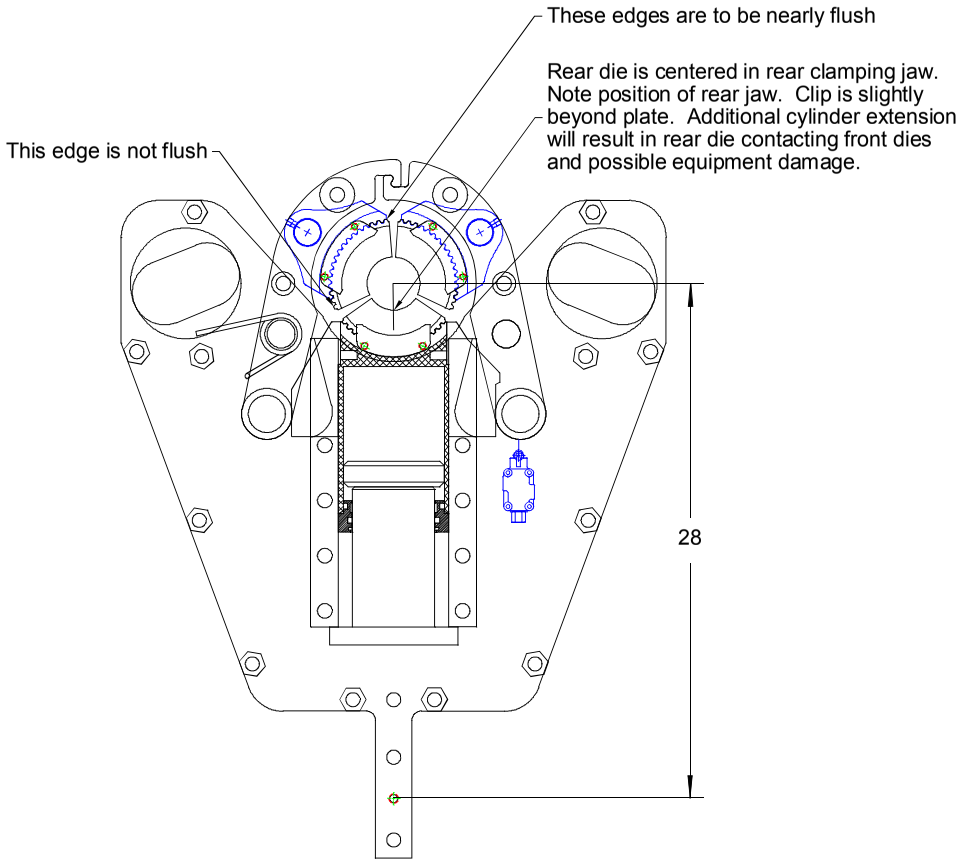
Special consideration must be given to insure the proper clips are used to insure proper die retention. The difference between the clips is the minor diameter and the thickness of the retaining lip. The BUCD5514 has an inner radius of 2.865" and a lip thickness of 0.200". The BUCD5531 has an inner radius of 2.780" and a lip thickness of 0.285".

Die or Die Adapter Series	Lower Clip Part Number	Upper Clip Part Number
wrap around dies 5 1/2" to 5"	BUCD5514	BUCD5514
all wrap around dies smaller than 5"	BUCD5514 or BUCD5531	BUCD5514 or BUCD5531
dovetail die adapters 5 1/4"	BUCD5514	BUCD5514
dovetail die adapters 5 1/4 " to 4 3/4"	BUCD5514 or BUCD5531	BUCD5531
all dovetail die adapters smaller than 4 3/4"	BUCD5514 or BUCD5531	BUCD5514 or BUCD5531

BUCD5500 **CLINCHER®** 5 1/2" **LOCKJAW™** Backup dressed with dovetail die adapters and strip dies for 4 3/4" drillpipe



BUCD5500 **CLINCHER®** 5 1/2" **LOCKJAW™** Backup dressed with wrap around dies for 2 7/8" tubing


These edges are to be nearly flush
Rear die is centered in rear clamping jaw. Note position of rear jaw. Clip is slightly beyond plate. Additional cylinder extension will result in rear die contacting front dies and possible equipment damage.
This edge is not flush
28

Rev.#	By	Log#	Description of Revision
6			
5			
4			
3			
2			
1			

1/8 LS STAMP P/N & W.O ON NON-CRITICAL SURFACE

ETCH P/N & W.O ON NON-CRITICAL SURFACE

TAG P/N & W.O

UNLESS OTHERWISE SPECIFIED TOLERANCES ARE — R6

2 PLACE DEC.	3 PLACE DEC.	FRACTIONS	ANGLES	SURFACE	FLATNESS AR PL.
±.020	±.005	± 1/16	± .5°	250	± .015 per foot

1. Dimensions are in inches
2. Remove burrs & sharp edges with 1/64x45°max.
3. Machined fillet radii are 1/32
4. Normality,Squareness & parallelism of machine surfaces are .002 per inch, to a max of .012 inches for a single surface.
5. Machine diameters on a common centerline must be concentric within .005 T.I.R & unmachined diameters concentric within .032 T.I.R

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1 =Revision No. X =STAMP,ETCH,TAG =Machine Zero

1.000 = Critical Dimension 100% Inspection Required

SHEET 1 of 1

SUPERIOR Manufacturing & Hydraulics
4225 HWY.90 E
BROUSSARD,LA 70518
(318)837-8847

PART NAME: use of die adapters and dies in BUCD5500 **LOCKJAW™** Backup

PART #:illustration

DRAWN BY:

APPROVED BY: DAN B

CHK BY: DB DATE: 11/22/99

REF: F:\Mark\BUCD5500\assembly.DWG

MATERIAL SPECIFICATION

Matl.Req:

Initial Condition:

Alternate Matl:

H.T Instructions: Case Depth:

P:\Manuals\Equip Manuals\Dwgs\BUCD5500 Die Adapter Illustration rev1.wpg 05/18/07

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Gripping range, jaws, adapters and dovetail die inserts for CLINCHER® 5 1/2 UHT Tong

Nominal Dovetail Tong Jaw and Dovetail Die Adapter Size	Tong Jaw Assembly Part Number	dovetail tong jaw part number	tong jaw roller part number	tong jaw pin part number	nominal dovetail jaw & adapter size	Dovetail tong jaw and dovetail backup adapter diametrical gripping range (OD in inches) when dressed with1 1/4" wide 3 7/8" long dovetail strip dies with thickness of:									
						1	0.875	0.8125	0.75	0.6875	0.625	0.5625	**0.5**	0.4375	<<dovetail die thickness
	assembly consists of two jaws c/w pins, rollers, dovetail dies and die retainers	*two pcs reqd per set*	*two pcs reqd per set*	*two pcs reqd per set*		*undersized (use this size for emergencies only)*	*undersized (use this size for emergencies only)*	*undersized (use this size for emergencies only)*	*undersized*	*undersized*	*undersized*	*undersized*	***STANDARD***	*oversized (use this size for emergencies only)*	<<pipe application
5 1/2 x 2 3/8	CJDT55-02375	55190-02375	55014-01	55013-01	2.375	1.375	1.625	1.750	1.875	2.000	2.125	2.250	**2.375**	2.500	maximum pipe OD for die & jaw
						1.000	*1.250*	*1.375*	*1.500*	*1.625*	*1.750*	*1.875*	***2.000***	*2.125*	*minimum undersized condition*
5 1/2 x 2 7/8	CJDT55-02875	55190-02875	55014-01	55013-01	2.875	1.875	2.125	2.250	2.375	2.500	2.625	2.750	**2.875**	3.000	maximum pipe OD for die & jaw
						1.500	*1.750*	*1.875*	*2.000*	*2.125*	*2.250*	*2.375*	***2.500***	*2.625*	*minimum undersized condition*
5 1/2 x 3 1/8	CJDT55-03125	55190-03125	55014-01	55013-01	3.125	2.125	2.375	2.500	2.625	2.750	2.875	3.000	**3.125**	3.250	maximum pipe OD for die & jaw
						1.750	*2.000*	*2.125*	*2.250*	*2.375*	*2.500*	*2.625*	***2.750***	*2.875*	*minimum undersized condition*
5 1/2 x 3 3/8	CJDT55-03375	55190-03375	55014-01	55013-01	3.375	2.375	2.625	2.750	2.875	3.000	3.125	3.250	**3.375**	3.500	maximum pipe OD for die & jaw
						2.000	*2.250*	*2.375*	*2.500*	*2.625*	*2.750*	*2.875*	***3.000***	*3.125*	*minimum undersized condition*
5 1/2 x 3 1/2	CJDT55-03500	55190-03500	55014-01	55013-01	3.500	2.500	2.750	2.875	3.000	3.125	3.250	3.375	**3.500**	3.625	maximum pipe OD for die & jaw
						2.125	*2.375*	*2.500*	*2.625*	*2.750*	*2.875*	*3.000*	***3.125***	*3.250*	*minimum undersized condition*
5 1/2 x 3 5/8	CJDT55-03625	55190-03625	55014-01	55013-01	3.625	2.625	2.875	3.000	3.125	3.250	3.375	3.500	**3.625**	3.750	maximum pipe OD for die & jaw
						2.250	*2.500*	*2.625*	*2.750*	*2.875*	*3.000*	*3.125*	***3.250***	*3.375*	*minimum undersized condition*
5 1/2 x 3 3/4	CJDT55-03750	55190-03750	55014-01	55013-01	3.750	2.750	3.000	3.125	3.250	3.375	3.500	3.625	**3.750**	3.875	maximum pipe OD for die & jaw
						2.375	*2.625*	*2.750*	*2.875*	*3.000*	*3.125*	*3.250*	***3.375***	*3.500*	*minimum undersized condition*
5 1/2 x 4	CJDT55-04000	55190-04000	55014-01	55013-01	4.000	3.000	3.250	3.375	3.500	3.625	3.750	3.875	**4.000**	4.125	maximum pipe OD for die & jaw
						2.625	*2.875*	*3.000*	*3.125*	*3.250*	*3.375*	*3.500*	***3.625***	*3.750*	*minimum undersized condition*
5 1/2 x 4 1/8	CJDT55-0xxxx	55190-0xxxx	55014-01	55013-01	4.125	3.125	3.375	3.500	3.625	3.750	3.875	4.000	**4.125**	4.250	maximum pipe OD for die & jaw
						2.750	*3.000*	*3.125*	*3.250*	*3.375*	*3.500*	*3.625*	***3.750***	*3.875*	*minimum undersized condition*
5 1/2 x 4 1/4	CJDT55-04250	55190-04250	55014-01	55013-01	4.250	3.250	3.500	3.625	3.750	3.875	4.000	4.125	**4.250**	4.375	maximum pipe OD for die & jaw
						2.875	*3.125*	*3.250*	*3.375*	*3.500*	*3.625*	*3.750*	***3.875***	*4.000*	*minimum undersized condition*
5 1/2 x 4 1/2	CJDT55-04500	55190-04500	55014-01	55013-01	4.500	3.500	3.750	3.875	4.000	4.125	4.250	4.375	**4.500**	4.625	maximum pipe OD for die & jaw
						3.125	*3.375*	*3.500*	*3.625*	*3.750*	*3.875*	*4.000*	***4.125***	*4.250*	*minimum undersized condition*
5 1/2 x 4 3/4	CJDT55-04750	55190-04750	55014-01	55013-01	4.750	3.750	4.000	4.125	4.250	4.375	4.500	4.625	**4.750**	4.875	maximum pipe OD for die & jaw
						3.375	*3.625*	*3.750*	*3.875*	*4.000*	*4.125*	*4.250*	***4.375***	*4.500*	*minimum undersized condition*
5 1/2 x 4 7/8	CJDT55-04875	55190-04875	55014-01	55013-01	4.875	3.875	4.125	4.250	4.375	4.500	4.625	4.750	**4.875**	5.000	maximum pipe OD for die & jaw
						3.500	*3.750*	*3.875*	*4.000*	*4.125*	*4.250*	*4.375*	***4.500***	*4.625*	*minimum undersized condition*
5 1/2 x 5	CJDT55-05000	55190-05000	55014-01	55013-01	5.000	4.000	4.250	4.375	4.500	4.625	4.750	4.875	**5.000**	5.125	maximum pipe OD for die & jaw
						3.625	*3.875*	*4.000*	*4.125*	*4.250*	*4.375*	*4.500*	***4.625***	*4.750*	*minimum undersized condition*
5 1/2 x 5 1/4	CJDT55-0xxxx	55190-0xxxx	55014-01	55013-01	5.250	4.250	4.500	4.625	4.750	4.875	5.000	5.125	**5.250**	5.375	maximum pipe OD for die & jaw
						3.875	*4.125*	*4.250*	*4.375*	*4.500*	*4.625*	*4.750*	***4.875***	*5.000*	*minimum undersized condition*
5 1/2 x 5 1/2	CJDT55-05500	55190-05500	55014-01	55013-01	5.500	4.500	4.750	4.875	5.000	5.125	5.250	5.375	**5.500**	5.625	maximum pipe OD for die & jaw
						4.125	*4.375*	*4.500*	*4.625*	*4.750*	*4.875*	*5.000*	***5.125***	*5.250*	*minimum undersized condition*
Note: XXXXX indicates this size has not been designed at this time, but is available upon request.															
*REPLACEMENT DOVETAIL INSERTS for JAWS AND DIE ADAPTERS - **CLINCHER®** part number for 1 1/4" wide x 3 7/8" long straight toothed dovetail die inserts used in dovetail jaws (4 pcs required per jaw or 8 pcs required per jaw set and dovetail die adapters (4 pcs)*						DTI1691	DTI1671	DTI1661	DTI1651	DTI1642	DTI1632	DTI1622	**DTI1601**	DTI1612	
*REPLACEMENT DOVETAIL INSERTS for JAWS AND DIE ADAPTERS - **CLINCHER®** part number for 1 1/4" wide x 3 7/8" long diamond toothed dovetail die inserts used in dovetail jaws (4 pcs required per jaw or 8 pcs required per jaw set and dovetail die adapters (4 pcs)*						upon request	upon request	upon request	upon request	upon request	DTI1632D	DTI1622D	**DTI1601D**	DTI1612D	

Gripping range, adapters and dovetail die inserts for CLINCHER® 5 1/2 LOCKJAW™ Backup for Drillpipe

Nominal Dovetail Tong Jaw and Dovetail Die Adapter Size	backup dovetail die adapter part number	nominal dovetail jaw & adapter size	Dovetail tong jaw and dovetail backup adapter diametrical gripping range (OD in inches) when dressed with1 1/4" wide 3 7/8" long dovetail strip dies with thickness of:									
			1	0.875	0.8125	0.75	0.6875	0.625	0.5625	**0.5**	0.4375	<<dovetail die thickness
	3 dovetail die adapters required to dress backup		*undersized (use this size for emergencies only)*	*undersized (use this size for emergencies only)*	*undersized (use this size for emergencies only)*	*undersized*	*undersized*	*undersized*	*undersized*	***STANDARD***	*oversized (use this size for emergencies only)*	<<pipe application
5 1/2 x 2 7/8	BUDT55-02875	2.875	1.875	2.125	2.250	2.375	2.500	2.625	2.750	**2.875**	3.000	maximum pipe OD for die & jaw
			1.625	*1.875*	*2.000*	*2.125*	*2.250*	*2.375*	*2.500*	***2.625***	*2.750*	*minimum undersized condition*
5 1/2 x 3 1/8	BUDT55-03125	3.125	2.125	2.375	2.500	2.625	2.750	2.875	3.000	**3.125**	3.250	maximum pipe OD for die & jaw
			1.875	*2.125*	*2.250*	*2.375*	*2.500*	*2.625*	*2.750*	***2.875***	*3.000*	*minimum undersized condition*
5 1/2 x 3 3/8	BUDT55-03375	3.375	2.375	2.625	2.750	2.875	3.000	3.125	3.250	**3.375**	3.500	maximum pipe OD for die & jaw
			2.125	*2.375*	*2.500*	*2.625*	*2.750*	*2.875*	*3.000*	***3.125***	*3.250*	*minimum undersized condition*
5 1/2 x 3 1/2	BUDT55-03500	3.500	2.500	2.750	2.875	3.000	3.125	3.250	3.375	**3.500**	3.625	maximum pipe OD for die & jaw
			2.250	*2.500*	*2.625*	*2.750*	*2.875*	*3.000*	*3.125*	***3.250***	*3.375*	*minimum undersized condition*
5 1/2 x 4	BUDT55-04000	4.000	3.000	3.250	3.375	3.500	3.625	3.750	3.875	**4.000**	4.125	maximum pipe OD for die & jaw
			2.750	*3.000*	*3.125*	*3.250*	*3.375*	*3.500*	*3.625*	***3.750***	*3.875*	*minimum undersized condition*
5 1/2 x 4 1/8	BUDT55-04125	4.125	3.125	3.375	3.500	3.625	3.750	3.875	4.000	**4.125**	4.250	maximum pipe OD for die & jaw
			2.875	*3.125*	*3.250*	*3.375*	*3.500*	*3.625*	*3.750*	***3.875***	*4.000*	*minimum undersized condition*
5 1/2 x 4 1/4	BUDT55-04250	4.250	3.250	3.500	3.625	3.750	3.875	4.000	4.125	**4.250**	4.375	maximum pipe OD for die & jaw
			3.000	*3.250*	*3.375*	*3.500*	*3.625*	*3.750*	*3.875*	***4.000***	*4.125*	*minimum undersized condition*
5 1/2 x 4 1/2	BUDT55-04500	4.500	3.500	3.750	3.875	4.000	4.125	4.250	4.375	**4.500**	4.625	maximum pipe OD for die & jaw
			3.250	*3.500*	*3.625*	*3.750*	*3.875*	*4.000*	*4.125*	***4.250***	*4.375*	*minimum undersized condition*
5 1/2 x 4 3/4	BUDT55-04750	4.750	3.750	4.000	4.125	4.250	4.375	4.500	4.625	**4.750**	4.875	maximum pipe OD for die & jaw
			3.500	*3.750*	*3.875*	*4.000*	*4.125*	*4.250*	*4.375*	***4.500***	*4.625*	*minimum undersized condition*
5 1/2 x 4 7/8	BUDT55-04875	4.875	3.875	4.125	4.250	4.375	4.500	4.625	4.750	**4.875**	5.000	maximum pipe OD for die & jaw
			3.625	*3.875*	*4.000*	*4.125*	*4.250*	*4.375*	*4.500*	***4.625***	*4.750*	*minimum undersized condition*
5 1/2 x 5	BUDT55-05000	5.000	4.000	4.250	4.375	4.500	4.625	4.750	4.875	**5.000**	5.125	maximum pipe OD for die & jaw
			3.750	*4.000*	*4.125*	*4.250*	*4.375*	*4.500*	*4.625*	***4.750***	*4.875*	*minimum undersized condition*
5 1/2 x 5 1/4	BUDT55-05250	5.250	4.250	4.500	4.625	4.750	4.875	5.000	5.125	**5.250**	5.375	maximum pipe OD for die & jaw
			4.000	*4.250*	*4.375*	*4.500*	*4.625*	*4.750*	*4.875*	***5.000***	*5.125*	*minimum undersized condition*
5 1/2 x 5 1/2	BUCX55005500	5.500	4.500	4.750	4.875	5.000	5.125	5.250	5.375	**5.500**	5.625	maximum pipe OD for die & jaw
			4.250	*4.500*	*4.625*	*4.750*	*4.875*	*5.000*	*5.125*	***5.250***	*5.375*	*minimum undersized condition*
Note: XXXXX indicates this size has not been designed at this time, but is available upon request.												
*REPLACEMENT DOVETAIL INSERTS for JAWS AND DIE ADAPTERS - **CLINCHER®** part number for 1 1/4" wide x 3 7/8" long straight toothed dovetail die inserts used in dovetail jaws (4 pcs required per jaw or 8 pcs required per jaw set and dovetail die adapters (4 pcs)*			DTI1691	DTI1671	DTI1661	DTI1651	DTI1642	DTI1632	DTI1622	**DTI1601**	DTI1612	
*REPLACEMENT DOVETAIL INSERTS for JAWS AND DIE ADAPTERS - **CLINCHER®** part number for 1 1/4" wide x 3 7/8" long diamond toothed dovetail die inserts used in dovetail jaws (4 pcs required per jaw or 8 pcs required per jaw set and dovetail die adapters (4 pcs)*			upon request	upon request	upon request	upon request	upon request	DTI1632D	DTI1622D	**DTI1601D**	DTI1612D	

Splined jaws and splined wraparound dies for CLINCHER® 5 1/2 UHT Tong for tubing and casing

Nominal tong jaw size	Splined Jaw Assembly Number *assembly consists of two jaws c/w pins, rollers, clips and clip bolts*	splined jaw part number *two pcs reqd per set*	splined jaw roller part number *two pcs reqd per set*	splined jaw pin part number *two pcs reqd per set*	top clip part number for tong jaws *four pcs reqd per set*	bottom clip part number for tong jaws *four pcs reqd per set*	available wraparound die series (two dies are required to dress tong jaws and three dies are required to dress backup for a total of five dies per tool - excludes any dies required for couplings)		
							fine tooth steel dies for tong	**GRIT FACE™** dies for tong	non-marking aluminum dies for tong
5 1/2 x 3 1/2 - 5 *	CJ-55A	55015	55014-01	55013-01	55017	55015-S1	CLE5500-nnnnn	BB5800-nnnnn	N/A
5 1/2 x 3 1/2 - 5 1/2	CJ-55B	55140	55014-01	55013-01	51027-T	51027-B	CLJ5501-nnnnn	BB5601-nnnnn	N/A
5 1/2 x 2 1/16 - 3 1/2	CJ-LF-55A	55137	55136	55135	55017	55015-S1	CLE5500-nnnnn	BB5800-nnnnn	CLFA5500-nnnnn

-nnnnn indicates size designated by replacing "nnnnn" sequence with size required (in inches) to three decimal places; i.e., 4.500 for 4 1/2" OD casing.

* ***Note:*** For maximum performance 2 1/16" thru 3 1/2" we recommend CJ-LF-55A.

Wrap Around Dies for BUC5500 5 1/2 UHT Backup and BUCD5500 5 1/2 LOCKJAW™ DP Backup for tubing and casing

fine tooth steel dies for backup	**GRIT FACE™** dies for backup	non-marking aluminum dies for backup
BUC5500-nnnnn	BB5700-nnnnn	BUCA5500-nnnnn
BUC5500-nnnnn	BB5700-nnnnn	BUCA5500-nnnnn
BUC5500-nnnnn	BB5700-nnnnn	BUCA5500-nnnnn

-nnnnn indicates size designated by replacing "nnnnn" sequence with size required (in inches) to three decimal places; i.e., 4.500 for 4 1/2" OD casing.

Note: **CLINCHER®** wraparound dies are machined to specific casing, tubing, coupling or accessory diameter. Additional dies must be orderd to match specific coupling diameters associated with accessories or special clearance premium tubular connections.

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ASSEMBLY INSTRUCTIONS

Fastener Lubrication and Make Up Torque Requirements

Most bolts, nuts and other threaded components are to be lubricated with Never-Seez or equivalent before assembly. Certain fasteners are to be assembled using permanent or removable Loctite as indicated in the assembly instructions and drawings. All tapered pipe threads are to be treated with a Teflon based pipe dope to assist in makeup and prevent leakage.

CAUTION: Do not use Teflon tape. Improper application of Teflon tape can cause joint failures. Teflon tape can release large particles which can plug small passages in hydraulic equipment.

All standard fasteners used in **CLINCHER®** products are to be GRADE 8 or better. DO NOT SUBSTITUTE lesser grades of fasteners. All fasteners are to be made up to the torque charted below. Failure to properly assemble these fasteners can result in their loss, product malfunction and ultimately result in situations where personnel can be exposed to dangerous situations.

UHT TONG and BACKUP FASTENERS		
Size	***Application***	***Torque***
1/4 - 20 NC	door switch mounting bolts, tong clip bolts	14 ft lbs
3/8 - 16 Set Screws	bearing caps, door switch adj. sleeve	* [1]
3/8 - 16 NC	housing cover, backup side plates, tong & backup clip bolts	38 ft lbs
1/2- 13 NC	top secondary bearing cap, brake bands, cage plate key, ring gear key, motor mounts, backup cyl. wedges, leg bolts	93 ft lbs
5/8 - 11 NC	tong plates, bearing caps, idler shaft bolts, backup cyl. gland bolts	180 ft lbs
3/4 - 16 NF	cam follower nuts	52 ft lbs
3/4 - 10 NC	LJ DP backup plates & doors, hanger bolts	317 ft lbs
7/8 - 9 NC	cage plate bolts	473 ft lbs
1 - 12 NF	dumbell roller	* [2]
1 - 8 NC	UHT backup backing bolt	100 ft lbs
1 1/4 - 12 NF	backup bulkhead connector	100 ft lbs
1 3/8 - 12 NF	dumbell roller 1st Generation	* [2]
1 1/2 - 12 NF	idler shaft	1,200 ft lbs

[*1] Bearing Caps: Coat with removable Loctite, tighten until screw contacts bearing, back off 1 turn. Door Switch Adj. Sleeve: Coat with removable Loctite, tighten by hand until snug.

[*2] Tighten until all slack is removed, but dumbell roller is still free to rotate by hand.

LUBRICATION STANDARDS

Bearings and gears must be lubricated to minimize friction, cool, exclude foreign matter and prevent corrosion. **CLINCHER®** recommends using Texaco Marfak MP 2 or equivalent for all grease zerts, roller bearings and bushings. Gears located within the clutch housing or between the tong plates are to be heavily lubricated using PLUSCO 855 or equivalent.

ASSEMBLY INSTRUCTIONS

TONG ASSEMBLY

This section pertains to the physical assembly of the **CLINCHER®** CLE5500 UHT Tong. Section 9 illustrates the individual sub assemblies in more detail. The purpose of this section is to guide the technician in the order of assembly as we would accomplish in the manufacturing process at our plant. Use this section as a guide to help you familiarize yourself with the component parts of the CLE5500. We have included drawings on the following pages to aid in the assembly. The drawings are laid out in the order in which you would assemble/disassemble the unit.

Order of Assembly:

1. Locate suitable working height. Approximately 6" above your waist. Tong Assembly Stands are available from Superior Manufacturing & Hydraulic, Inc. which are custom made for tong service work.
2. Install Bottom Tong Plate PN 55043, on Assembly Stand.
3. Bolt CLE5500 UHT Tong Mid Body PN 55044 to Bottom Tong Plate PN 55043 with (22) 5/8"-11 x 1 1/2" HHCS PN 1157, (4) 5/8"-11 x 2 1/4" HHCS PN 201 (for Side Handles), (26) 5/8" Lockwashers PN 1151, and (3) 5/8"-11 x 1" SHCS PN 1153.
4. Press Bearing PN 1903 into Bottom Secondary Bearing Cap PN 55041. Install (2) 3/8"-16 x 1/2" Set Screws PN 1029 (use removable Loctite), and 3/4" NPT Flush Plug PN 1610.
5. Install Bottom Secondary Bearing Cap Assembly onto Bottom Tong Plate PN 55043 using (4) 5/8"-11 x 1 3/4" HHCS PN 1158 with (4) 5/8" Lockwasher PN 1151.
6. Press Bearing PN 1902 into Bottom Pinion Bearing Cap PN 55036. Install (2) 3/8"-16 x 1/2" Set Screws PN 1029 (use removable Loctite), and 1/8" NPT Flush Plug PN 1607.
7. Install Bottom Pinion Bearing Cap Assembly onto Bottom Tong Plate PN 55043 using (4) 5/8"-11 x 1 1/4" HHCS PN 1156 with (4) 5/8" Lockwasher PN 1151.
8. Dumbell Roller Assembly (4^{th} Generation):
   a) Install (2) 1/8" NPT Zert PN 1001 on Dumbell Roller Shaft PN 76025-A.
   b) Install 1"-12 Low Profile Nylock Nut PN 1213 onto Dumbell Roller Shaft PN 76025-A.
   c) Press (2) Bushing PN 55191 into each end of Dumbell Roller PN 55025-B.
   d) Fit Spacer PN 55027-D into Dumbell Roller PN 55025-B.
   e) Install (2) Spacer PN 55192 into Dumbell Roller Assembly, one on each end.
   f) Make up 1"-12 LP Nylock Nut PN 1213 on other end of each Dumbell Shaft.
9. Idler Gear without Micro-Cam Assembly (PN 55049):
   a) Press Bearing PN 1905 into Idler Gear PN 55049.
   b) Install (2) Snap Rings PN 1926 in Idler Gear PN 55049.
   c) Press Idler Gear Assembly onto Idler Shaft PN 55050.
   d) Install External Snap Ring PN 1946 on Idler Shaft PN 55050.

ASSEMBLY INSTRUCTIONS

e) Install Idler Gear and Shaft Assembly onto Bottom Tong Plate PN 55043 using (3) 5/8"-11 x 2" HHCS PN 1160 with (3) 5/8" Lockwasher PN 1151. Bolt Idler Shaft PN 55050 using 1 1/2"-12 Jam Nut PN 1222 with 1 1/2" Lockwasher PN 1223.

f) Install 1/8" NPT Zert PN 1001 at end of Idler Shaft PN 55050.

10. Install Ring Gear PN 55057-02 into Tong Body making sure teeth in Idler Gear PN 55049 align with teeth in Ring Gear.

11. Install (10) Dumbell Roller Assemblies around Ring Gear PN 55057-02 making sure holes in Dumbell Roller Assemblies match up to holes in Bottom Tong Plate PN 55043.
Hint: Temporarily install Dumbell Roller Shafts thru Dumbell Roller Assembly and Bottom Tong Plate to control position.

12. Pinion Gear Assembly:

    a) Press Pinion Gear PN 55038-01 into Bearing PN 1902 which was previously installed in Bottom Pinion Bearing Cap PN 55036 that is bolted to Bottom Tong Plate PN 55043.

    b) Install Low Pinion Gear PN 55047 onto Pinion Gear PN 55038-01.

    c) Install Bearing PN 1902 onto Pinion Gear PN 55038-01 and add Pinion Bearing Bushing PN 55047-1.

13. Install Secondary Input Gear PN 55048 into Bearing PN 1903, which was previously installed into Bottom Secondary Bearing Cap PN 55041.

14. Install Top Tong Plate PN 55063 onto Mid Body PN 55044 using (17) 5/8"-11 x 1 3/4" HHCS PN 1158, (4) 5/8"-11 x 2 1/4" HHCS PN 201 (for Side Handles), (21) 5/8" Lockwashers PN 1151, (5) 5/8"-11 x 1 3/4" SHCS PN 1154 with (5) 5/8" Hi Collar Lockwasher PN 1152, and (3) 5/8"-11 x 1" SHCS PN 1153.

15. Press Bearing PN 1900 into Top Bearing Retainer PN 55066. Install Top Bearing Retainer Assembly onto Secondary Input Gear PN 55048, then Top Tong Plate using (3) 5/8"-11 x 1 1/4" HHCS PN 1156 with (3) 5/8" Lockwasher PN 1151, and (1) 5/8"-11 x 1 1/4" SHCS PN 256 with (1) 5/8" Hi Collar Lockwasher PN 1152.

16. Insert Dumbell Roller Shafts PN 76025-A with 1"-12 Low Profile Nylock Nut PN 1213 through Bottom Tong Plate PN 55043, through Dumbell Roller Assemblies, and finally through Top Tong Plate PN 55063. After installing Dumbell Roller Shafts through Top Tong Plate, fasten with 1"-12 Low Profile Nylock Nut PN 1213.
WARNING: Insure Thrust Washers are correctly positioned.

17. High Gear Idler Assembly:

    a) Press (2) Bearing PN 1909 into High Gear Idler PN 55123.

    b) Install Snap Ring PN 1949 into High Gear Idler PN 55123.

    c) Install High Gear Idler Assembly onto High Gear Idler Shaft PN 55124 which is welded to Top Plate.

    d) Install External Snap Ring PN 1950 onto High Gear Idler Shaft PN 55124.

18. Install High Gear PN 55119, High Gear Retainer PN 55122-01, and Ext. Snap Ring PN 1950 on Pinion Gear PN 55038-01.

19. Install Low Gear Housing Cover PN 14006 onto Low Gear Housing PN 14005 (welded to Top Plate) using (10) 3/8"-16 x 1 1/4" HHCS PN 1048 with (10) 3/8" Lockwasher PN 1027.

    Note: When Gear Housing is not welded to Top Plate, install Housing Cover using (8) 3/8"-16 x 5" HHCS PN 1051 with (8) 3/8" Lockwasher PN 1027 and (2) 3/8"-16 x 4" SHCS PN 243.

ASSEMBLY INSTRUCTIONS

20. Secondary Bearing Cap Assembly:
    a) Press Bearing PN 1901 into Top Secondary Bearing Cap PN 55143.
    b) Install (4) 3/8"-16 x 1/2" Set Screw PN 1029 (use removable Loctite) into Top Secondary Bearing Cap PN 55143.

    Note: When Encoder is not mounted, install 1" NPT Flush Plug PN 1611 on Bearing Cap PN 55143. For optional Encoder mounting, see figure of Secondary Gear with Encoder.

21. Drive Gear/Detent Assembly:

    Install Drive Gear PN 55084 over Motor Shaft PN 55086-A. Install Steel Ball PN A20-X53-10 and Detent Spring PN A20-A1327135 into Drive Gear PN 55084. Apply permanent Loctite to 3/8"-16 x 1/4" Set Screw PN 1028. Install Set Screw in Drive Gear PN 55084, tighten Set Screw until good detent action is achieved. Proper adjustment is confirmed when resistance is encountered when shifting gear across detent groove on shaft.

22. Install Polypack Seal PN 12501437 into Seal Retainer PN 55088. Install Seal Retainer Assembly and Motor Spacer PN 55085 onto Motor Shaft PN 55086-A. Install Motor PN 45078 with Motor Shaft Assembly in Shifting Box Weldment PN 55076-S1 using (4) 1/2"-13 x 1 1/4" HHCS PN 1111 and (4) 1/2" Lockwasher PN 1103.

23. Shifting Gear Assembly:

    Install Split Self-Lubricating Flange Bearing PN 45106 onto Shifter Shaft PN 45143. Install Drive Gear PN 55084 and Motor Shaft Bearing Spacer PN 55121 in Shifting Box PN 55076-S1 with Shifter Shaft Assembly and Shifting Yoke Assembly PN 45072. Install Self-Lubricating Flange Bearing PN 45092 onto Shifter Shaft Assembly using 3/8" Flatwasher, 3/8" Lockwasher PN 1027, and 3/8"-16 x 3/4" HHCS PN 1046. Install Handle Ball PN 55071 onto Straight Yoke Handle PN 45142 using 3/8"-16 x 1 1/4" Set Screw PN 1040. Install Handle Assembly onto Shifter Shaft Assembly using 3/8" Flatwasher, 3/8" Lockwasher PN 1027, and 3/8"-16 x 3/4" HHCS PN 1046.

24 Install A-20 Valve Sections with plumbing on Motor PN 45078.

25. Cage Plate Assemblies:
    a) Install (15) Cam Follower PN SSCF162500 in Top Cage Plate PN 55011 with (15) 1/4" Drive Zert PN 1257, (15) 3/4"-16 Jam Nut PN 1170, and (15) 3/4" Lockwasher PN 1171.
    b) Install (15) Cam Follower PN SSCF162500 in Bottom Cage Plate PN 55056 with (15) 1/4" Drive Zert PN 1257, (15) 3/4"-16 Jam Nut PN 1170, and (15) 3/4" Lockwasher PN 1171.
    c) Fit Top Cage Plate Cam Followers into Ring Gear groove. Use crane to raise Bottom Cage Plate and fit Bottom Cage Plate Cam Followers into Ring Gear groove. Fasten Cage Plates together using (6) 7/8"-9 x 7" HHCS PN 1250 with 7/8" Heavy Split Lockwasher PN 1224.

26. Door Assembly and Door Installation: *(4th Generation)*
    a) Install (2) 1/8" NPT Zert PN 1001 in Door Shaft PN 55022-A, one on each end.
    b) Install 1"-12 Low Profile Nylock Nut PN 1213 on Door Shaft PN 55022-A.
    c) Press Bearing PN 1910 into Door Plates (Door Weldment PN 55113-01).
    d) Mount Tong Door onto Tong.
    e) Install Tong Door Bushing PN 55125 onto Door Shaft Assembly.

f) Install Door Shaft Assembly through Bottom Door Plate, Bottom Tong Plate, Dumbell Roller Assembly, Top Tong Plate, and Top Door Plate.

g) Install additional Tong Door Bushing PN 55125 onto Door Shaft Assembly.

h) Install 1"-12 Low Profile Nylock Nut PN 1213 on Door Shaft PN 55022-A.

i) Install Door Switch Adjustment Sleeve PN 76131 onto top of Door.
Note: Collar is cut with weld bevel and is to be welded to top of Tong Door.

j) Install (2) 3/8"-16 x 1/2" Set Screws PN 1029 (use removable Loctite) on Door Switch Adjustment Sleeve PN 76131.

27. Door Switch Assembly:

a) Install (1) 1/4" Street Ell PN 1449 in Door Switch PN SLV1000-01.

b) Install (1) 1/4" MNPT x 1/4" MJIC 90 Degree PN 1576.

c) Install (1) 1/4" MNPT x 1/4" MJIC 90 Degree PN 1576 into "tank" port of Door Switch PN SLV1000-01.

d) Mount Door Switch PN SLV1000-01 on Door Switch Base PN 76128 with (4) 1/4"-20 x 2 1/4" Bolt PN 110, and (4) 1/4"-20 Nylock Nut PN 212.

e) Mount Assembly to (2) Door Switch Base Mount PN 45067-S7 (Base Mounts should be welded to Top Tong Plate) with (2) 3/8"-16 x 1" Bolt PN 1047 and (2) 3/8" Lockwasher PN 1027.

28. Door Switch Adjustment Instructions:

a) Loosen 3/8"-16 x 1/2" Set Screws PN 1029 to align recess in Door Switch Adjustment Sleeve PN 76131 with Roller on Door Switch PN SLV1000-01. Tighten Set Screws PN 1029.

b) Loosen 1/4"-20 Nylock Nuts PN 212 and slide Door Switch PN SLV1000-01 forward until fully seated in recess in Door Switch Adjustment Sleeve PN 76131. Tighten Nylock Nuts PN 212.

c) Connect Tong to Power Unit and actuate motor while in low gear. Verify Ring Gear stops rotating when Tong Door is opened.

29. Brake Band Assembly and Installation: *(3rd Generation)*

a) Install Brake Band Assembly PN 55061A onto Top Tong Plate using 1/2"-13 x 2" HHCS PN 1112-A, inserting through Brake Band Lug Weldment PN 55126 and Gusset welded to Brake Band Ring, with 1/2"-13 Nylock Nut PN 1087.

b) Install Brake Band Assembly PN 55061A onto Bottom Tong Plate using 1/2"-13 x 2" HHCS PN 1112-A, inserting through Brake Band Lug Weldment PN 55126 and Gusset welded to Brake Band Ring, with 1/2"-13 Nylock Nut PN 1087.

Note: Bottom Brake Band Lug Assembly includes 1/8" NPT Zert PN 1001 with 1"-12 Low Profile Nylock Nut PN 1213.

OPERATIONAL INSTRUCTIONS

SUSPENSION

A) Tong should be hung by a 7/8" IWRC minimum O.D. wire cable with a 31 ton minimum breaking strength. It should be hung as close to the center of the drill rotary without interfering with operation of drill string and lifting equipment. It is recommended the operator make use of the **CLINCHER®** Lift Cylinder. The **CLINCHER®** Lift Cylinder incorporates a hydraulic cylinder and manual lift spring. The hydraulic cylinder portion is used to assist in the raising and lowering of the tong and backup while the spring allows for movement during make-up and break-out.

   WARNING: The suspension system must allow the tong to easily move down a distance equivalent to the thread make-up length. If significant resistance is encountered the suspension system may be subject to load which could cause its failure, damage equipment, or expose personnel to severe or fatal hazards.

B) Assure that tong is suspended in level manner. Both tong and the backup must be level at the point they contact the tubular. Using adjustment screws and slots in rigid hanger assembly, adjust tong so that it hangs level on horizontal axis and is parallel to tubular on vertical axis.

C) Make certain that floor space is adequate to maneuver tong on and off pipe. The space must be clear of obstructions to allow safe and unrestricted operation.

D) Attach 1" IWRC minimum wire cable with a 51.7 ton minimum breaking strength or better, as a tong back up line at 90 degree angle to tong and at same level to insure proper readout of torque indicator. You should always have snubbing line attached. Use of a integral hydraulic backup is safer than manual backup, but operators should maintain additional safety of snubbing line to prevent injury in case of hydraulic failure or the failure of operator to have backup properly applied to tubular. This equipment generates extreme torque and should be used with caution.

Jaw and Die Installation

A) Be sure all power to unit is off and power unit itself is shut down.

B) Determine O.D. of tubular to be made-up or broken-out. Use proper dies to bite O.D. of tubular and insert as follows: Remove sliding head jaws (2) from cage plate pockets. Insert one jaw with proper dies into pocket assuring the jaw roller pin faces upward. Repeat procedure for other side.

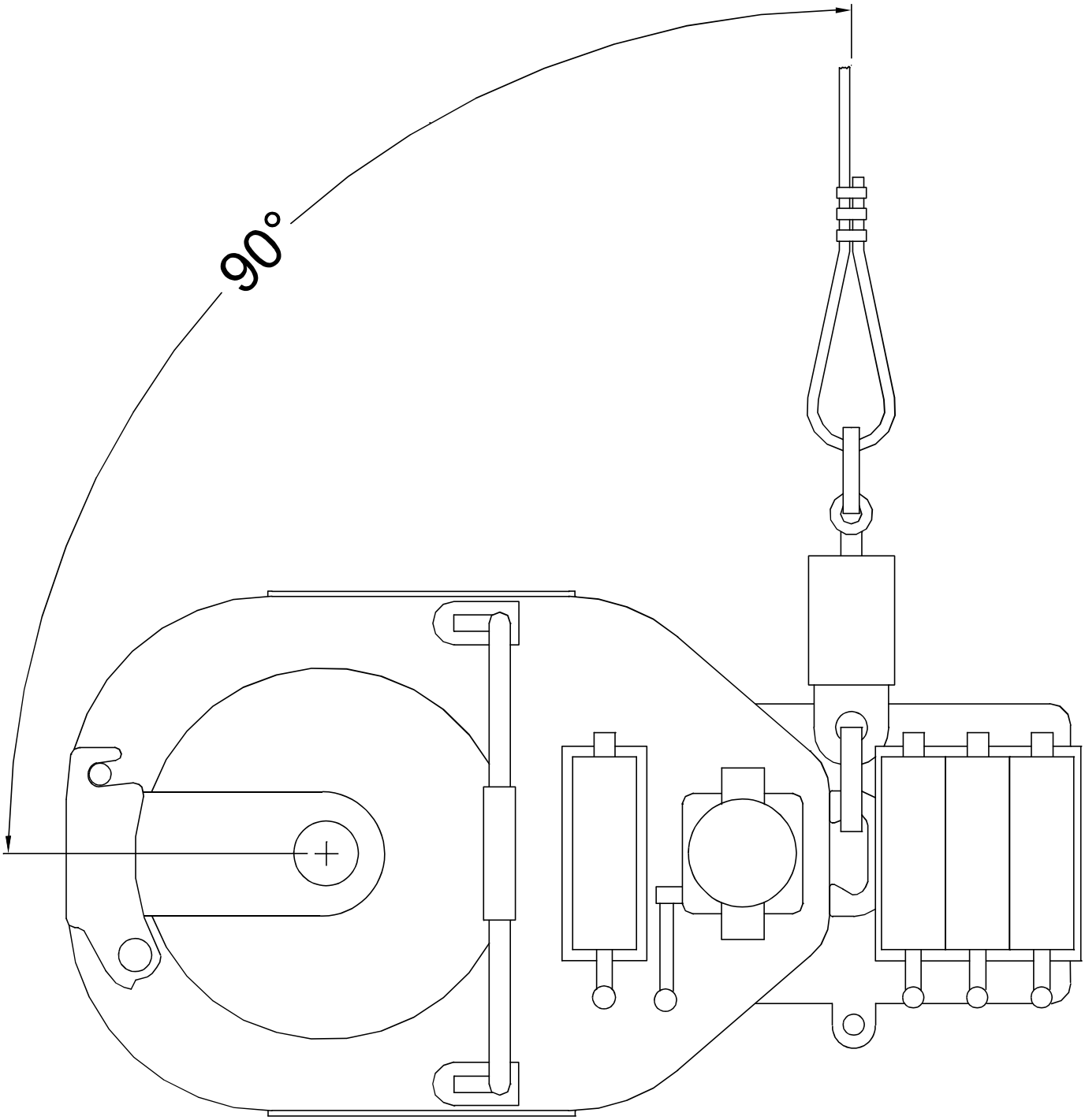
OPERATIONAL INSTRUCTIONS

Hydraulic Lines

A) Be sure all power to unit is off and power unit itself is shut down.

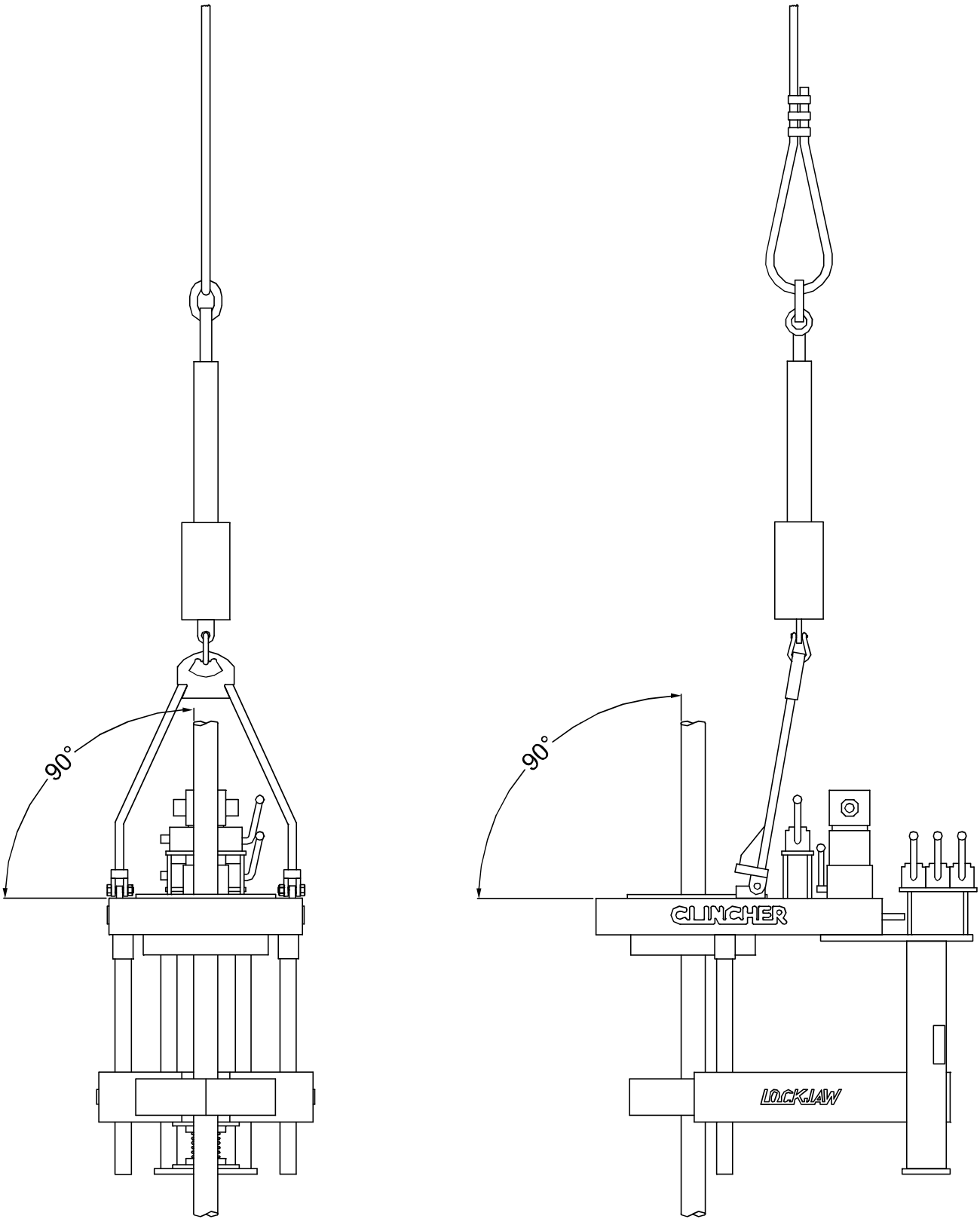
B) Always inspect hoses prior to installation for abrasions, kinks, and other visible damage.

C) Install hydraulic supply hose and hydraulic return hose between tong and hydraulic power unit. Be advised that the standard installation on **CLINCHER®** tong calls for 1" Hydraulic Supply hose and 1-1/4" Hydraulic Return hose. The differing hoses eliminates the possibility attaching the wrong hose to the wrong outlet while at the same time reducing back pressure in your hydraulic system.



TYPICAL SNUB LINE INSTALLATION

NOTE: SNUB LINE IS PERPENDICULAR
TO AXIS OF TONG



TYPICAL TONG INSTALLATION

NOTE: TONG IS PERPENDICULAR
TO TUBING

OPERATIONAL INSTRUCTIONS

Tong Operation

A. Insure proper dies are installed. Connect hydraulic hoses, verify reservoir is full of hydraulic fluid and insure suction valve is open.

B. Open bypass valve to hydraulic system, then check to make sure all hose connections are secure and hydraulic system is free of leaks.

C. Be certain door is completely closed before operation to insure safe operation. The **CLINCHER®** CLE5500 UHT is equipped with a door switch, which prevents operation of the tong when door is even partially open.

D. Use power unit to start up procedure as outlined in your owners manual supplied by the manufacturer.

E. In the event hoses are not tightened securely, possible failures to hydraulic system can occur.

   1) If pressure supply hoses are restricted or flow is blocked, pressure will increase in the hydraulic power unit, resulting in increased RPM in the power unit.

   2) If return line hoses are restricted or flow is blocked, pressure will increase in the hydraulic power unit and the hydraulic system to the tong itself, resulting in the tong motor increasing to maximum pressure and possible motor seal failure.

F. After completion of A through E restart the power unit and allow engine to idle for approximately 10 minutes. Slowly close bypass valve to allow circulation of hydraulic oil through tong and hoses. Place shifting lever into low and rotate several times. Repeat in reverse. If correct jaw-die combination is installed, the unit is now ready to run pipe.

G. Adjust height of tong to proper height, using the control valve located all the way to the right of rear valve bank assembly.

H. Stand in the normal operators position, insert the locking pin into the rear cage plate hole (on operators side). This pin allows ring gear to rotate clockwise (make-up) and engage the cam to close jaws on pipe.

I. Swing tong and backup onto tubing, making sure to align tubing on rear jaw of backup. Close backup jaws by pushing middle control lever forward. The design of the **CLINCHER®** Integral Backup centers pipe in the backup and tong. Close tong door.

J. Rotate ring gear clockwise by pushing motor control lever on the front valve bank assembly forward until jaws lock on pipe and continue to rotate until desired amount or torque is applied.

K. After correct amount of torque specific to that connection has been applied, release tong jaws by pulling back on motor control lever until jaws release and throat in cage plate is aligned with door opening. Open door.

L. Release backup by pulling back on right control lever on rear valve bank assembly until backup jaws are completely retracted.

M. High and low gear is adjusted by use of shifting lever PN 45060, located to the left side of the shifting housing. With the lever in the upwards position the tong is in high gear. With the shifting lever in the downward position, the tong is in low gear.

MAINTENANCE INSTRUCTIONS

CLINCHER® recommends that owners of **CLINCHER®** Hydraulic Power Tongs, Backups, **CHROMEMASTER™**s and accessories adapt a regularly scheduled maintenance program. Implementation of this type of program offers several benefits. First you increase the life of your equipment, secondly, you may find a problem before it escalates to a costly repair or down time on the job, and most importantly, prevent injury to operating personnel.

A major inspection (described at the end of this section) should be carried out if equipment is suspected to have been damaged during transit or is to be mobilized to a remote location where maintenance operations are difficult to carry out.

Routine Maintenance

Cleaning - Upon return from each and every job:

A) Pre-wash unit to remove majority of dirt and grease build up as to allow removal of dies, and inspection of overall condition of unit.

B) Remove and inspect dies from tong and backup. Note any missing or damaged die retainers, and or die retainer bolts.

C) Remove side jaws from tong and inspect side jaw for missing or broken parts, damaged splines, broken ears (locking hooks on front portion of side jaws.)

D) Clean and inspect side jaws, jaw pins, jaw rollers for damage or excessive wear (cracks, breakage, and uneven wear patterns). Reassemble jaw sections replacing any damaged parts. Lubricate pins, and rollers and reinstall in tong.

E) Clean and inspect backup operating cylinder. Insure sline area is free from damage and any rust or dirt is removed. Replace any missing or damaged die retainer clips and die retainer bolts.

F) Inspect all hoses for wear, replace as necessary.

G) Inspect hanger assembly to assure all parts are returned and in operating condition. (*i.e.* H-Plates, spring, leg springs, leg spring caps and pins.)

H) Replace jaw, pins and rollers in tong.

I) Lubricate tong's cam followers (upper and lower), dumbell roller shafts (upper and lower zerts), door shaft, idler gear shafts (2), pinion gear, and secondary gear assemblies (Pinion gear and secondary gear assemblies are installed with sealed bearings. There is no provisions to grease these bearings. However, if replaced by non-sealed bearings, the 1/8" N.P.T. flush plugs should be replaced with zerts PN 1001 and both gear assemblies should be added to the regular lubrication schedule.), low gear housing, and shift housing (2 zerts each), and re-pack tong body cavity. Lubricate zerts in backup plates and pins.

MAINTENANCE INSTRUCTIONS

J) Install dies of a size needed for testing purposes, and attach hydraulic power unit to tong. Before energizing power unit make certain no one is working on tong or backup and all tools and parts are removed from the tong and backup.

K) Insert test mandrel of the exact same size as the dies which are installed in the tong and backup. **Caution:** Testing the function of the backup without the proper size dies installed and/or without the proper sized mandrel in place, you risk serious damage to the backup cylinder.

L) After power unit has reached operating R.P.M. and temperature, operate the backup control valve and close backup around test mandrel using sufficient flow and pressure to clamp mandrel and maintain pressure to backup. (Recommended operating pressure of 2,500 psi) Backup pressure gauge should match system operating pressure. After release of control valve you may experience a slight drop in backup pressure (up to 300 psi) this is normal. If backup pressure drops more than 300 psi within 2 minutes, you may be experiencing a hydraulic leak.

M) While maintaining pressure on backup visually inspect hoses, stainless steel lines, fittings, etc., for seepage of hydraulic fluid. Repair or replace parts causing leaks. If you see no visible external leaks and your backup is still losing pressure, there may be an internal leak in the operating cylinder or load holding valve allowing fluid to bypass the piston. It is recommended that the backup be returned to the manufacturer for repair.

N) If at this time your backup is functioning correctly, open and close unit several time to insure consistent operation.

O) With the proper dies installed in the tong and backup, and test mandrel locked in the backup, place reversing pin into the make-up position, set tong into low gear and operate tong through several cycles of locking, biting and torquing to required torque. Change reversing pin to break-out position and repeat. Repeat same procedure in high gear.
Note: Torque developed in high gear is considerably less than torque developed in low gear.

P) Test door interlock system by opening door slightly with tong rotating. (Remove test mandrel for this procedure.) The tongs rotation should stop. If tong rotation fails to stop, close door, cease rotation, deactivate power unit, and inspect door interlock switch for damage. Insure that adjustment collar is oriented to allow wheel of door switch to fit into recess on collar.
Warning: If door switch system is not functioning properly tong must not be used.

Q) Reinspect tong and backup hydraulic system for leaks.

R) If at this time the unit is functioning as intended, replace all covers and grease splines in tong and backup (side jaws and back jaws), tape or grease spools on control valves (to prevent paint from adhering to polished spool surface), prime and paint unit for storage.

MAINTENANCE INSTRUCTIONS

Recommended Lubrication Schedule Performed After Completion Of Each Job

Hydraulic Tong

a) Cam followers: upper and lower (all)
b) Dumbell roller shafts: upper and lower (all)
c) Door shaft
d) Idler shafts (2)
e) Low gear housing (2 zerts)
f) Shift housing (2 zerts)
g) Re-pack tong cavity
h) Pinion and secondary gear shafts (if sealed bearings have been replaced by non-sealed bearings)
i) Jaw rollers and pins: Remove jaw pins and rollers, clean and lubricate with gear grease
j) Inspect hydraulic fluid for foreign material and contaminant. Filter or replace. Your must filter or replace entire system including power unit tank and lines along with tong to insure all contaminants are removed.

Annual Major Maintenance

Inspection and repair

Routine preventative maintenance will significantly extend the operating life of your equipment, reduce operating cost and avoid downtime. **CLINCHER®** recommends a program of frequent routine inspection, and if equipment is suspected to have been damaged during transit or is to be mobilized to a remote location where maintenance operations are difficult to carry out, perform the following:

A) Visually inspect components on power tong or backup which could possibly have been damaged either during operation or transit. *i.e.* Damage to hanger assembly, hydraulic backup, mounting legs, or hydraulic valve assembly.

B) Check test date. Ensure that a load test and inspection was carried out within the last 9 months.

C) Check ring gear. Check for any signs of damage or wear.

D) Remove motor and valve assembly from the tong body.

E) Check motor seal. Apply hydraulic power, run motor and visually check motor seal for any signs of leakage.

F) Check drive gear, high and low pinion gears. Check for excessive sign of wear on motor gear.

G) Check condition of control valve spools. Activate valves and check for any sign of wear, pitting, or scoring of the chrome surface of spools. If spool is damaged in any way, the complete section must be changed out. Spools are not interchangeable.

MAINTENANCE INSTRUCTIONS

H) Check gear selector and shaft. Visually inspect the shifting shaft for alignment and straightness.

I) Check Hi/Low Gear assembly. Visually inspect high and low clutch and gears for any sign of chipped, broken, or worn teeth.

J) Check dumbell rollers, shafts and bushings. Check for excess movement on either bearings, bushings, shafts or dumbells.

K) Check idler gears and center pinion shaft gears and bearings. Check that there are no signs of worn, chipped, or broken teeth on idler and center pinion shaft gears.

L) Check door bearings. Visually check excess movement on bearings at door assembly. If excess movement is found door must be removed making careful note of bearing washers positions for reassembly.

M) Check door switch system. Visually check that door switch valve has sufficient strength to hold door in closed position. If this is not the case, then repairs are required.

N) Check door safety device. Functionally check tong door safety switch. Engage low gear, open tong door and push rotor control lever forward as if to rotate rotor. If safety device is operational then the rotor will not rotate.

O) Check lifting hanger test date. Check lifting hanger for damage. Ensure that a load test and inspection was carried out within the last 9 months.

P) Check condition of all hydraulic hoses and fittings. Visually inspect all hydraulic hoses fitted to the tong and in the backup for any signs of leaks, cuts, or wear.

Q) Reinstall all parts which were removed for inspection and/or damage. Connect to hydraulic power supply and function test operation of tong in high, low, forward, and reverse. Torque test utilizing appropriate dies and test mandrel. Test operation of lift cylinder.

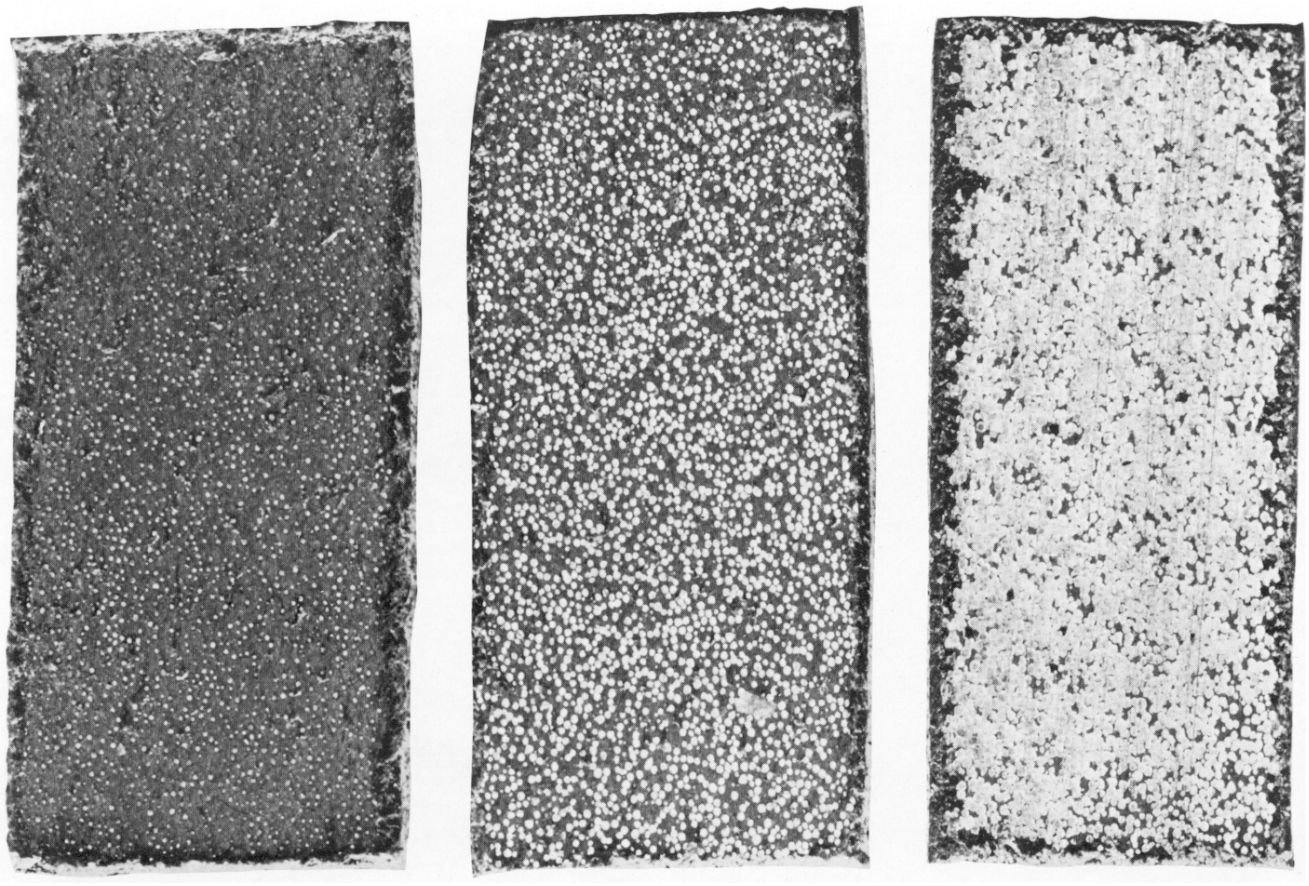
R) Inspect power unit system according to manufactures specifications.

S) Lubricate tong and backup according to maintenance schedule preceding this section.

T) Paint, remembering to mask off surfaces not intending to paint with grease or masking tape.

U) Complete dated inspection report giving details of all duties performed along with complete list of items replaced.

DU® BEARING DRY WEAR PROCESS



1. 2. 3.

1. Running-in completed. Low wear rate starts when up to 10% of the bronze is exposed.

2. Typical surface appearance when DU® bearing approaches its half life with 40% to 50% of the bronze exposed.

3. Bronze is beginning to smear near the end of DU's useful life as a dry bearing. Over 75% of the bronze is visible at the surface.

For additional information about DU bearings, please contact Garlock Bearings Inc,
700 Mid Atlantic Parkway, Thorofare, New Jersey 08086. **(609) 848-3200** FAX: (609) 848-5115

TROUBLESHOOTING

HYDRAULIC SYSTEM

Hydraulic Pump Making Excessive Noise:

	Problem	Solution
A)	Restricted or clogged intake line	Clean line, check for contamination.
B)	Contaminated fluid	Flush system, change fluid.
C)	Restricted vent	Clean or replace air vent.
D)	Air in fluid	Check for leaks and be certain fluid suction in tank is well below hydraulic fluid in reservoir.
E)	Damaged or worn parts	Repair or replace damaged parts, check fluid for contamination.
F)	Excessive RPM	Check PTO, gears, and recommended speed to assure proper pump is installed for operation.
G)	Increased friction	Make sure pump has been assembled using correct torque values.
H)	Damaged or worn relief valve.	Replace relief valve.
I)	Damaged or worn check valve.	Replace check valve.
J)	Restricted discharge	Check to make sure relief valve is set to proper pressure.
K)	Valve system restricted	Inspect and repair or replace defective parts, check system for contamination.

Excessive Wear to Hydraulic Components:

	Problem	Solution
A)	Fluid contamination	Flush fluid system, replace with new fluid.
B)	Components misaligned	Inspect and realign.
C)	High operating pressures	Gauge and set to proper pressure.
D)	Exhausted fluid (depletion of additives)	Flush fluid system, replace with new fluid.
E)	Air in fluid	Check for leaks, and be certain fluid suction in tank is well below hydraulic fluid in reservoir.
F)	Shortened bearing life	Check alignment, insure proper lubrication to non-sealed bearings.

TROUBLESHOOTING

HYDRAULIC TONG SYSTEM

Slow Tong Speed:

	Problem	Solution
A)	Restricted supply line	Clear supply line and check intake on reservoir.
B)	Low fluid level	Add fluid to proper volume.
C)	Air leak	Locate and repair leak.
D)	Pump speed insufficient	Assure proper pump speed for application.
E)	Damaged or worn equipment	Isolate pump and check pressure to determine whether motor or pump is defective. Repair or replace defective part.
F)	Pump not primed	Check fluid viscosity and restrictions of intake line. Replace fluid if inadequate for operating temperature.
G)	Low or no flow from supply line	Check to assure couplings are securely fastened.
H)	Hydraulic bypass valve malfunction	Inspect. Adjust unloading pressure. Replace or repair as necessary.

Insufficient Torque:

	Problem	Solution
A)	Door switch malfunctioning	Check to make sure door is completely closed. Inspect door switch and dump valve. Replace or repair door switch and/or dump valve.
B)	Relief valve malfunctioning	Relief set too low, broken valve spring, contamination or defective seals.
C)	Damaged or worn pump parts	Inspect, repair, or replace.
D)	Slow pump speed	Assure proper pump speed for application.
E)	Improper system fluid	Check fluid viscosity and replace fluid if inadequate for operating temperature.
F)	Directional control valve set improperly	Check relief and directional control valve. Neutral should return slightly to reservoir.

TROUBLESHOOTING

HYDRAULIC TONG SYSTEM

Insufficient Torque:

	Problem	Solution
G)	Damage tong motor	Inspect, repair, or replace.
H)	Restriction of supply line, excessive back pressure	Check to assure couplings are securely fastened.
I)	Defective gauge or load cell	Inspect, repair, or replace. Assure unit has been calibrated to proper arm length. NOTE: When using **CLINCHER®** integral backup system, it is the length of backup arm, NOT the tong arm length.

Difficulty Shifting Gears:

	Problem	Solution
A)	Broken key in shifting yoke	Inspect and replace key stock in shifting yoke.
B)	Worn or damaged shifting yoke pins	Inspect and replace broken or worn pins.
C)	Insufficient lubrication	Pump grease into both zerts located on shift housing.
D)	Detent ball bearing spring set too tight	Inspect and relieve pressure by adjusting set screw on shifting gear PN 55084.

Failure to Grip Tubulars:

	Problem	Solution
A)	Jaws move out from neutral, but fail to penetrate pipe. Tong not perpendicular.	Inspect die size and replace with correct dies for pipe. Wrong size dies for tubulars. Assure suspension of tong is perpendicular to tubulars. Adjust hanger as necessary.
B)	Jaws fail to move out of neutral. Brake band not tight enough, faulty cam followers, rust debris or damage to jaws.	Inspect for excessive wear on brake band. Inspect and replace defective cam followers. Remove rust and debris from jaws, and jaw pockets. Inspect jaw rollers and pins for wear, flats, and lubrication. Repair, replace, and lubricate as needed.

TROUBLESHOOTING

HYDRAULIC TONG SYSTEM

Failure to Grip Tubulars:

	Problem	Solution
C)	Tong will not release from tubular. Brake band not tight enough, defective cam followers in cage plate, insufficient lubrication to jaw pin and roller.	Inspect for excessive wear on brake band. Inspect and replace defective cam followers. Remove rust and debris from jaws, and jaw pockets. Inspect jaw rollers and pins for wear, flats, and lubrication. Repair, replace, and lubricate as needed.
D)	Tong motor runs but ring gear does not rotate. Broken gears or defective shift in hydraulic tongs system.	Inspect and replace defective gears. Inspect and repair or replace defective shifting parts.
E)	Tong binds under light load. Worn or damaged cam followers, dumbell roller bearing, or idler bearing.	Inspect and replace defective parts.
F)	Ring gear rotates while control lever is in neutral.	Replace control valve.
G)	Shift will not stay in set position. Lost detent ball or spring.	Replace detent ball and spring.
H)	Hydraulic fluid leaking from motor. Damaged or worn motor shaft seal.	Replace motor shaft seal.

HYDRAULIC BACKUP SYSTEM

Failure to hold tubulars:

	Problem	Solution
A)	Incorrect die for size tubular	Check pipe OD and match die size to pipe OD.
B)	Dies have material compacted in tooth area; worn teeth.	Clean dies with wire brush and inspect. Replace with new dies if necessary.
C)	Power unit pressure set incorrectly	Inspect relief valve on power unit to make sure enough system pressure is being delivered to backup.
D)	Counter balance valve not holding pressure	Remove side plates on backup. Bench test and replace the defective counter balance valve.
E)	Internal leakage in backup cylinder	Disconnect lines and bench test cylinder. Repair or replace as necessary.
F)	Jaws will not retract. Counter balance valve is stuck.	Replace counter balance valve.
G)	External leakage of cylinder	Repair or replace cylinder.
H)	Control valve set to neutral, but jaws extend.	Inspect control valve for damage and/or incorrect spool. Repair or replace as necessary.

SECTION 7 5 1/2" UHT TONG & BACKUP PARTS LISTS

RECOMMENDED TONG SPARE PARTS LIST

Part Number	***Quantity***	***Description***
12501437	1	Seal for Rineer Motor
55013-01	2	Standard Jaw Pins (Heavy Duty)
55135	2	Low Friction Jaw Pins
55014-01	2	Standard Jaw Rollers (Heavy Duty)
55136	2	Low Friction Jaw Rollers
1001	8	1/8 NPT Zerts
SLV1000-01	1	Door Switch Assembly
45072	1	Shifting Yokes
55061-A	1	Brake Band Assy.
CM5573	2	Die Clip (5 1/2" UHT Backup)
BUCD5514	2	Die Clip (5 1/2" DP Backup)
BUCD5533	2	Die Clip (5 1/2" DP Backup)
CM7656-01	1	Die Clip (6 1/4" UHT Backup)
VA20-MRV-1	1	A-20 Relief Cartridge

ACCESSORIES AND OPTIONS

Several different accessory items are available for the **CLINCHER®** Tong and Backup to allow them to be customized to provide a system most appropriate for the inducer's application.

CLE5500 Tong Accessories

Compression Load Cell and Torque Gauge	directly measures applied torque
Tension Load Cell and Torque Gauge	directly measures applied torque
Solenoid Operated Module for Dump Valve	allows computer to limit torque applied
Adapter for Turns Proximity Switch	allows computer to sense rotation
3 Point Lifting Bridle	alternative lifting system
Lift Cylinder with Integral Spring Hanger	controls vertical position
TSP-80 Tong Speed Control	allows slow speed rotation with full torque
2 Speed Motors	
Alternate Motor Displacements	

BUC5500 and BUCD5500 Backup Accessories

Backup Handles	simplifies manipulation
Shipping Skids and Cages	simplify handling, transport and help guard against damage

SECTION 9 UHT TONG ILLUSTRATIONS

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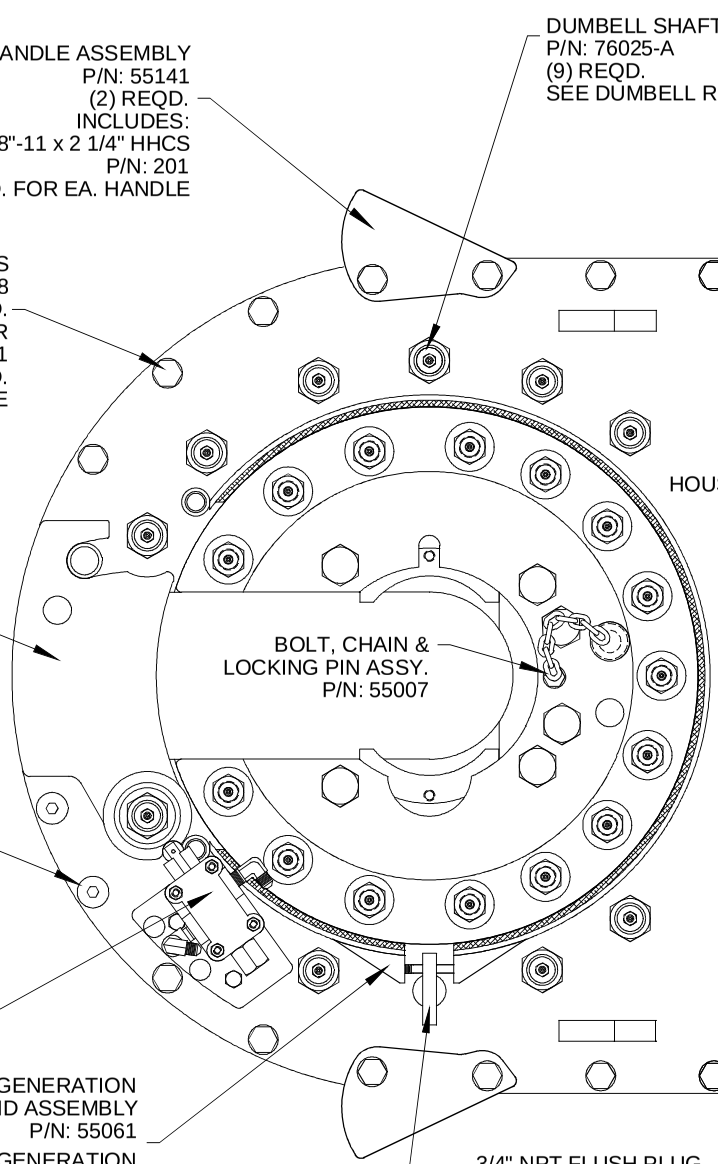

SIDE HANDLE ASSEMBLY
P/N: 55141
(2) REQD.
INCLUDES:
5/8"-11 x 2 1/4" HHCS
P/N: 201
(4) REQD. FOR EA. HANDLE

DUMBELL SHAFT
P/N: 76025-A
(9) REQD.
SEE DUMBELL ROLLER ASSEMBLY

3/4" NPT FLUSH PLUG
P/N: 1610

TOP TONG PLATE
P/N: 55063

5/8"-11 x 1 3/4" HHCS
P/N: 1158
(17) REQD.
5/8" LOCKWASHER
P/N 1151
(21) REQD.
ON TOP PLATE

■ WHEN HOUSING IS WELDED TO TOP PLATE

WHEN HOUSING IS NOT WELDED TO TOP PLATE USE:

3/8"-16 x 5" HHCS
P/N: 1051
WITH 3/8" LOCKWASHER
P/N: 1027
(8) REQD. OF EACH
3/8"-16 x 4" SHCS
P/N: 243
(2) REQD.
[INSIDE HOUSING, BELOW COVER]

1/8" NPT ZERT
P/N: 1001
(2) REQD.

5/8"-11 x 1 3/4" SHCS
P/N: 1154
WITH
5/8" HI-COLLAR LOCKWASHER
P/N: 1152
(5) REQD. ON TOP PLATE

LOW GEAR
HOUSING COVER
P/N: 14006

TOP SECONDARY
BEARING CAP
P/N: 55143
SEE SECONDARY
GEAR ASSEMBLY

TONG DOOR
ASSEMBLY

BOLT, CHAIN &
LOCKING PIN ASSY.
P/N: 55007

SHIFTING BOX
WELDMENT
P/N: 55076

■ 3/8"-16 x 1 1/4" HHCS
P/N: 1048
WITH 3/8" LOCKWASHER
P/N: 1027
(10) REQD. OF EACH

5/8"-11 x 1" SHCS
P/N: 1153
(3) REQD.

1/2"-13 x 1 1/4" HHCS
P/N: 1111
WITH 1/2" LOCKWASHER
P/N: 1103
(4) REQD. OF EA.

DOOR SWITCH
ASSEMBLY
P/N: SLV1000-01

MOTOR
P/N: 45078
WITH MOTOR SHAFT & MOTOR SPACER
P/N: 55086-A P/N: 55085

1ST GENERATION
2 PIECE BRAKE BAND ASSEMBLY
P/N: 55061

2ND GENERATION
1 PIECE BRAKE BAND ASSEMBLY
P/N: 55061A

BRAKE BAND
LUG ASSEMBLY
P/N: 55126
WITH
1"-12 LP NYLOCK NUT
P/N: 1213

3/4" NPT FLUSH PLUG
P/N: 1610

SHIFT ASSEMBLY
P/N: 45091
SEE SHIFTING
GEAR ASSEMBLY

TOP VIEW

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4225 HWY. 90 EAST
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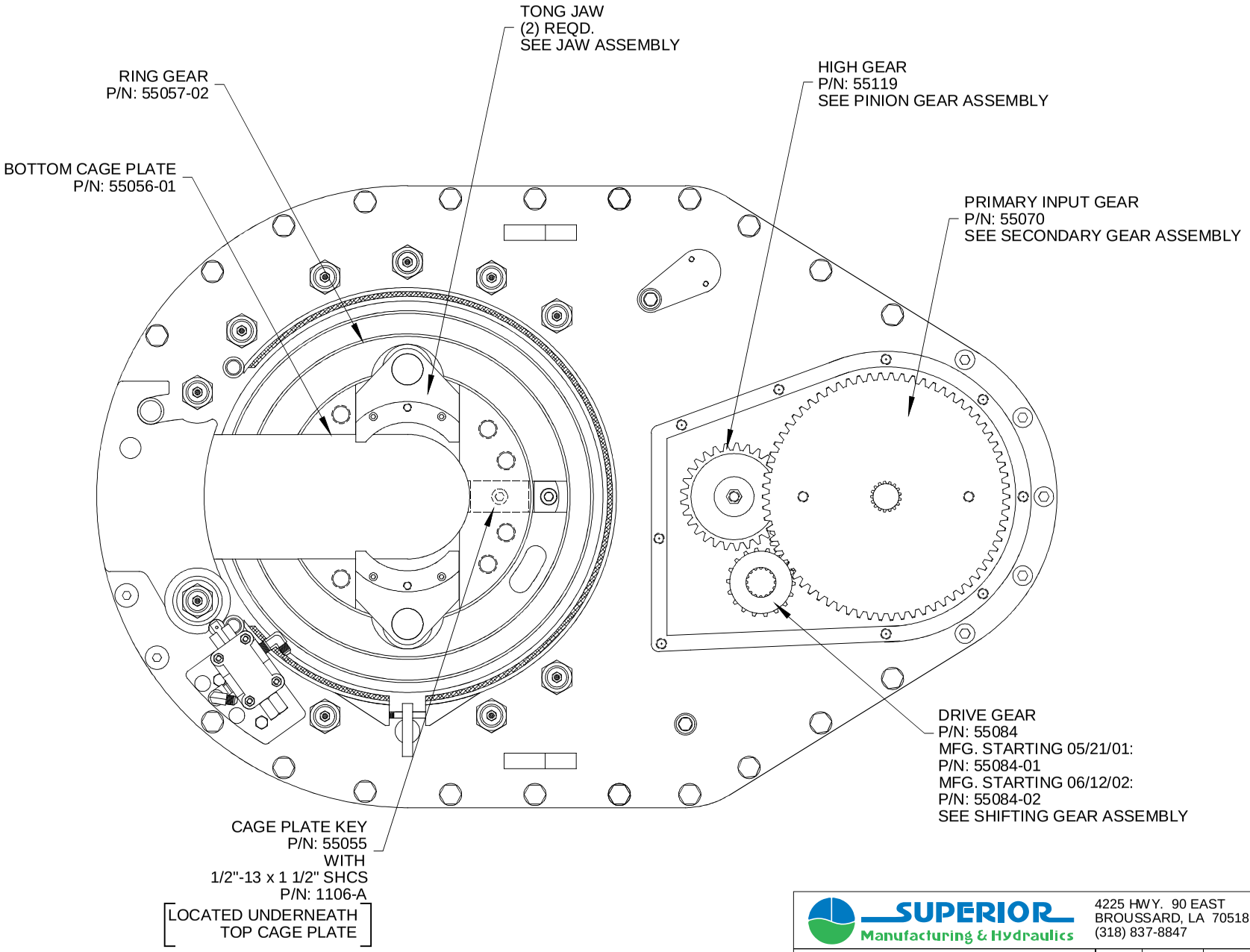
1		05/09/03
REV. #	LOG #	DATE

REF: P:\Manuals\Equip Manuals\Dwgs\CLE5500-15B\Top View Sh1 rev1.wpg



TOP VIEW

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2		05/31/07
REV. #	LOG #	DATE

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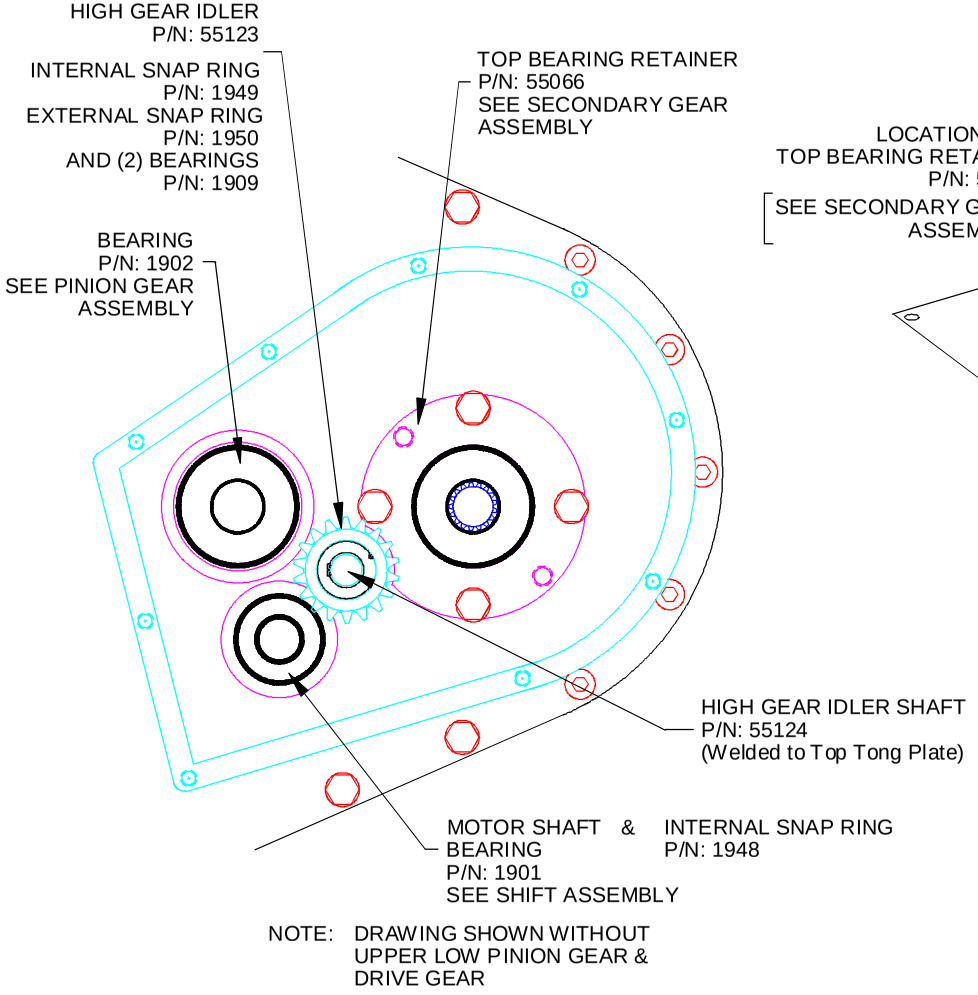
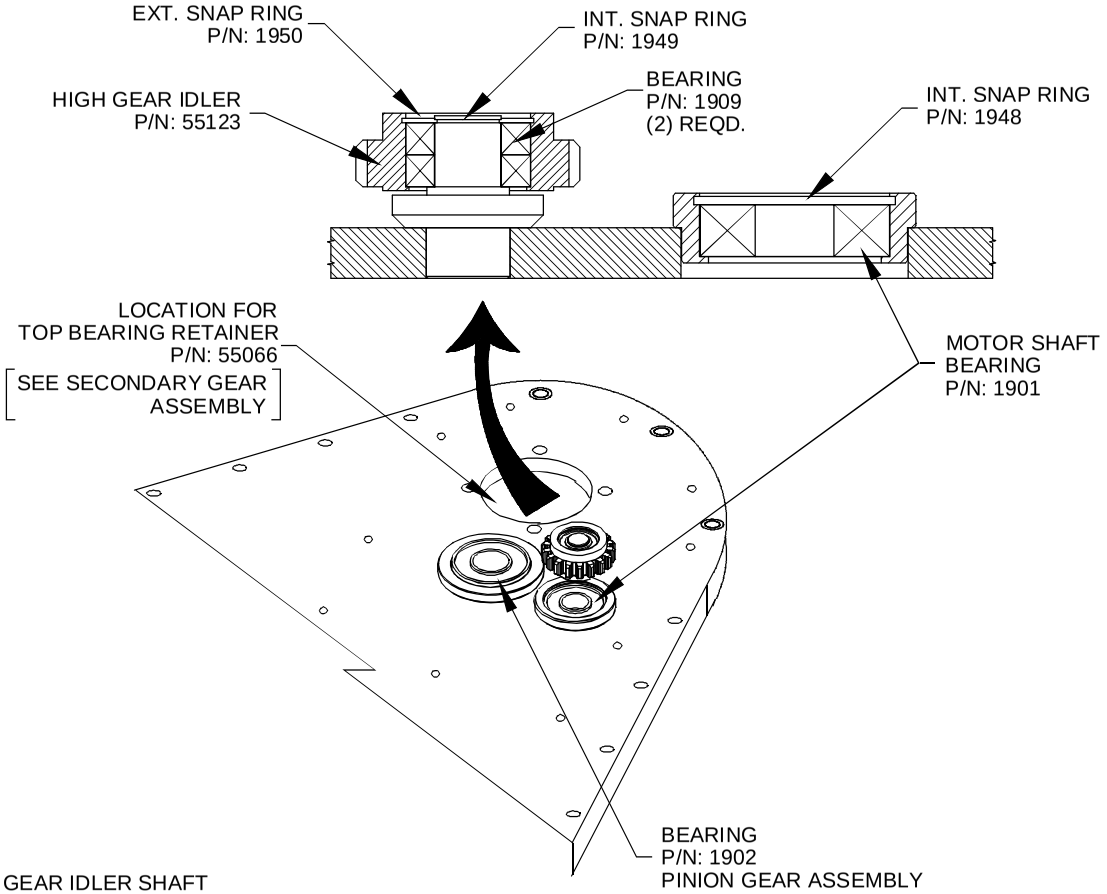


NOTE: DRAWING SHOWN WITHOUT UPPER LOW PINION GEAR & DRIVE GEAR



NOTE: DRAWING SHOWN WITHOUT LOW GEAR HOUSING

GEAR HOUSING TOP VIEW

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1		09/21/04
REV. #	LOG #	DATE

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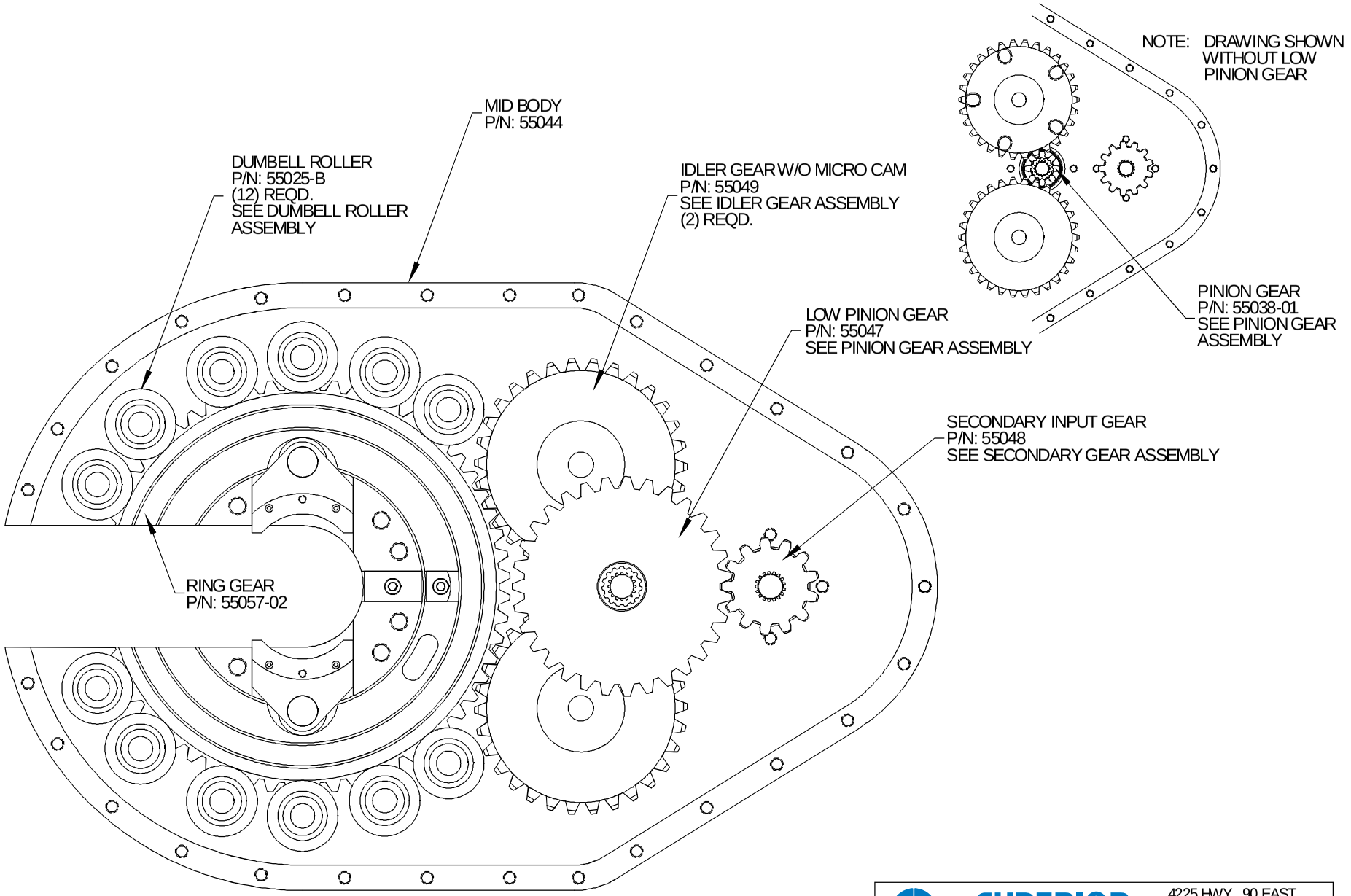

5 1/2" UHT TONG GEAR TRAIN

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REV. #	LOG #	DATE
1		09/21/04

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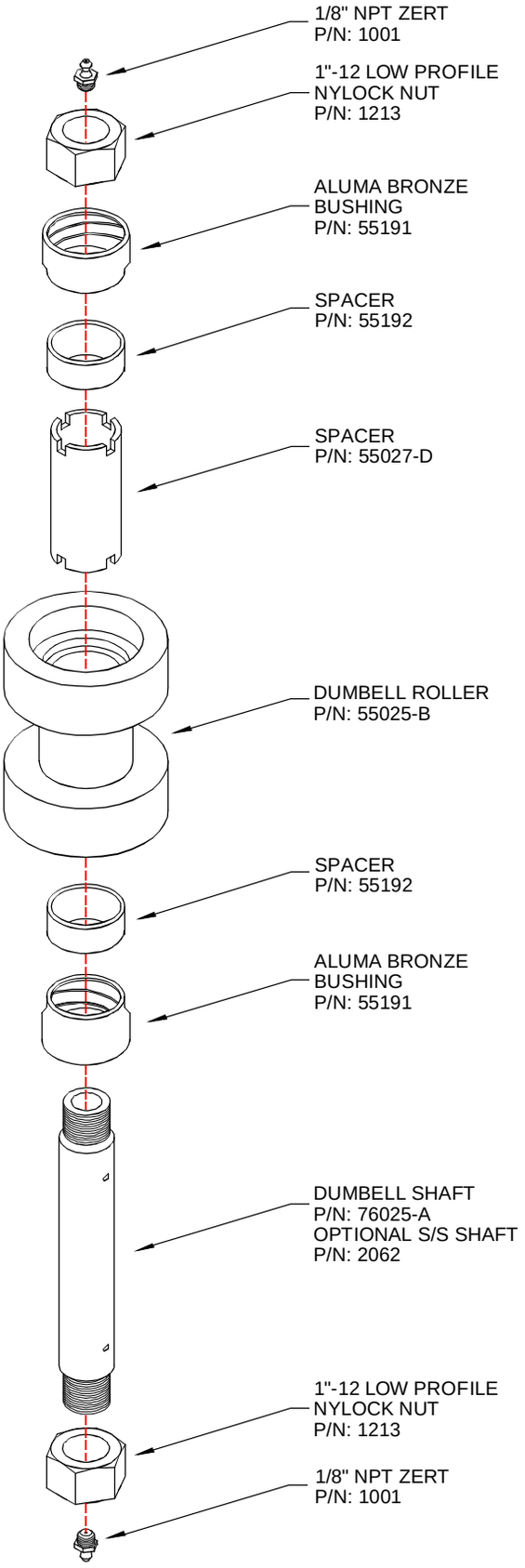

DUMBELL ROLLER ASSEMBLY

4TH GENERATION
Model CLE5500-15B

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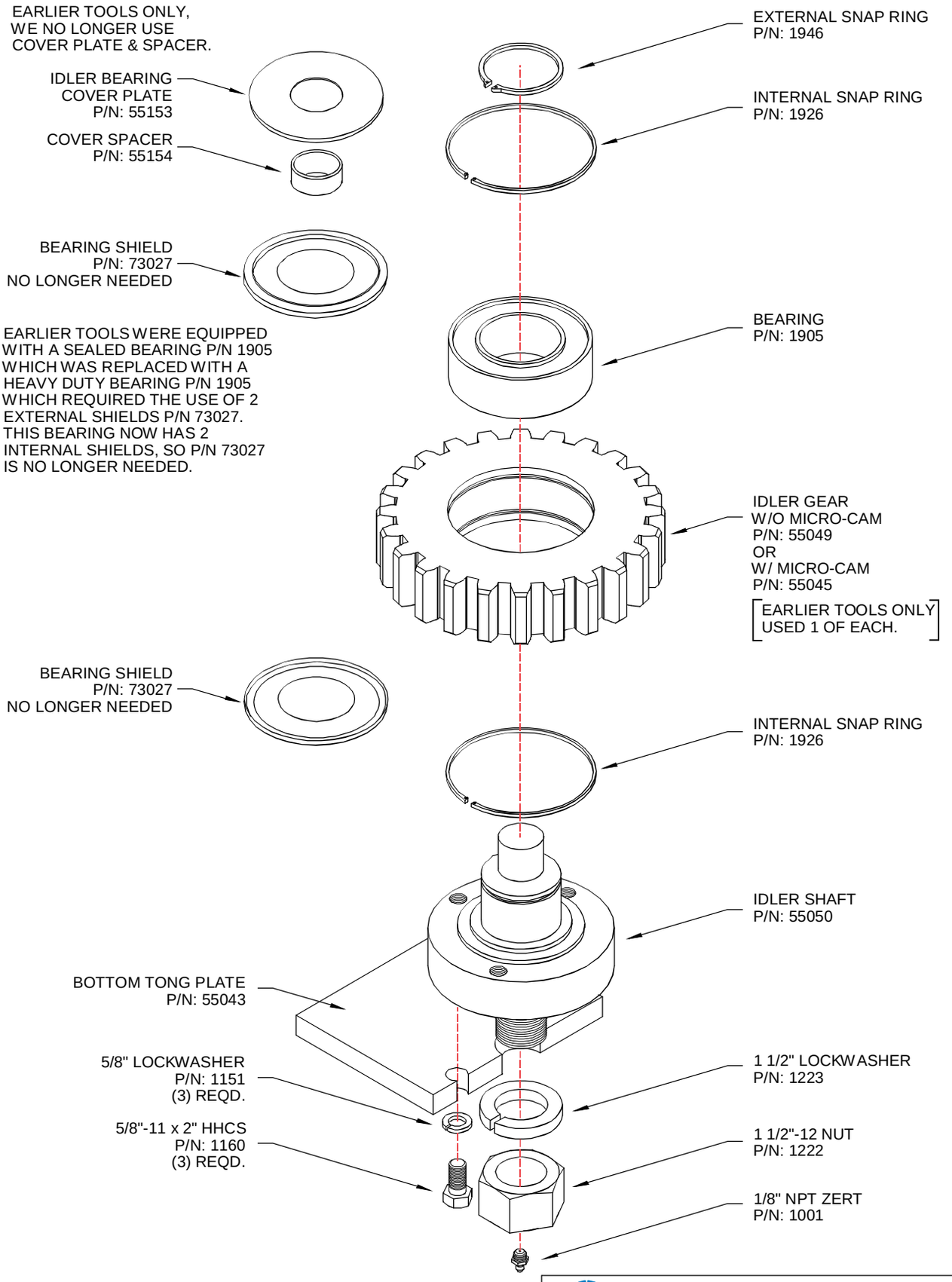
		11/07/01
REV. #	LOG #	DATE

REF: S:\Equip Manuals-Dwgs\CLE5500\Dumbell Roller 4th.wpg



IDLER GEAR ASSEMBLY

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		11/07/01
REV. #	LOG #	DATE

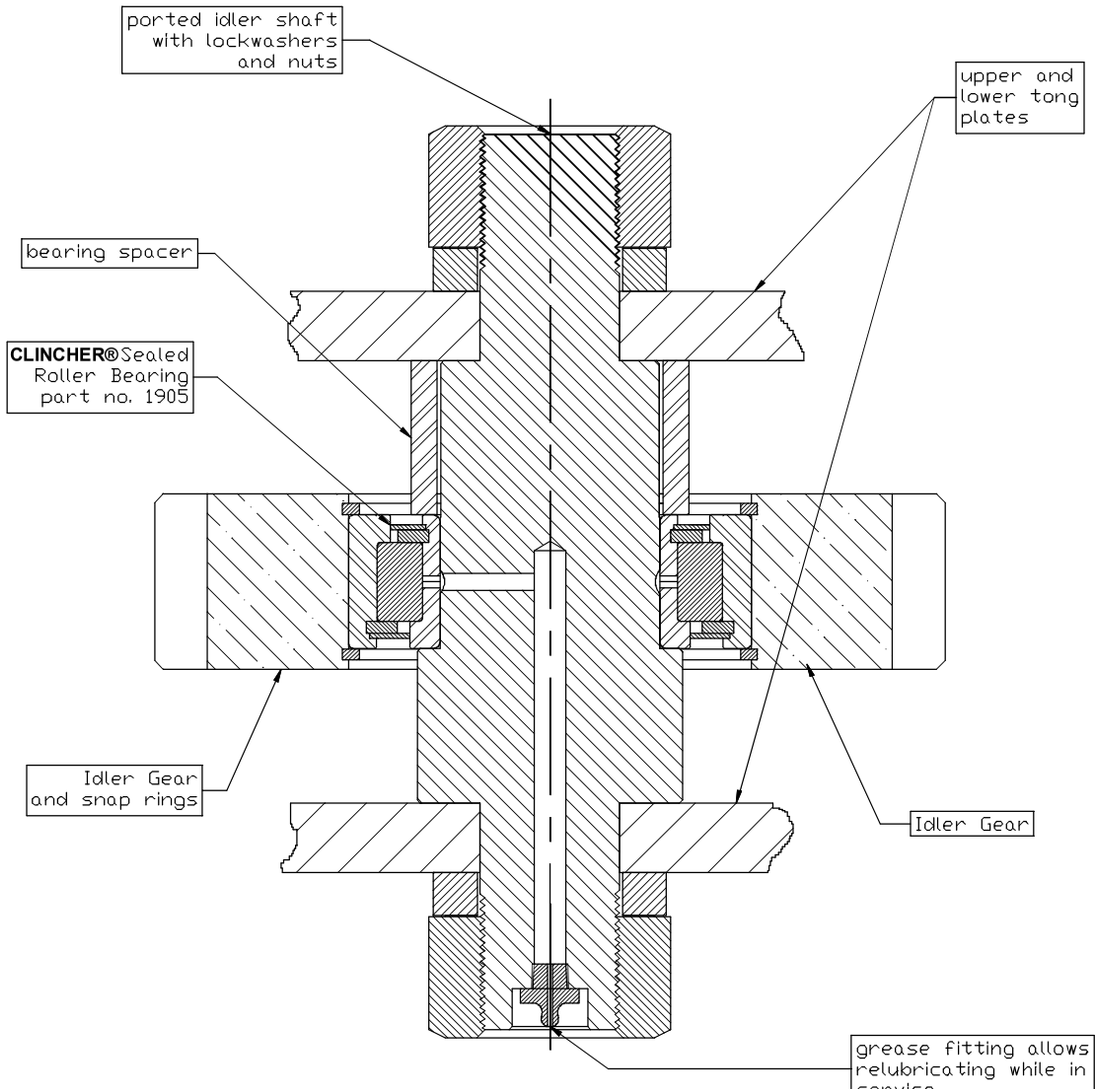
REF: S:\Equip Manuals-Dwgs\CLE5500\Idler Gear.wpg

Features and Benefits:
Proprietary sealed bearing with full compliment roller design offers greater load ratings than commercially available sealed ball bearings. The ported inner race allows the bearing to be relubricated without disassembly. Integral elastomeric seals allow grease to be displaced but prevent migration of contaiminants into bearing.

Elastomeric seals are corrosion resistant and suitable for use in environments which are incompatible with traditional aluminum bearing shrouds.

Unique geometric design allows rollers to absorb thrust loads to maximize component life.

Nominal OD: 4.3307 inches
Nominal ID: 2.3622 inches
Nominal Ht: 1.4375 inches
static rating: 37540 lbs
dynaminc rating: 29230 lbs
(1mm cycles, 33 1/3 RPM f/ 500 hrs.)


ported idler shaft with lockwashers and nuts
upper and lower tong plates
bearing spacer
CLINCHER® Sealed Roller Bearing part no. 1905
Idler Gear and snap rings
Idler Gear
grease fitting allows relubricating while in service

SECTION VIEW of typical application

Rev.#	By	Log#	Description of Revision
3			
2			
1	DB	12/07/02	added desc of thrust load capability

UNLESS OTHERWISE SPECIFIED TOLERANCES ARE — R3

2 PLACE DEC. ±.020	3 PLACE DEC. ±.005	FRACTIONS ± 1/16	ANGLES ± .5°	SURFACE 250	FLATNESS AR PL. ± .015 per foot

1. Dimensions are in inches
2. Remove burrs & sharp edges with 1/64x45°max.
3. Machined fillet radii are 1/32
4. Normality,Squareness & parallelism of machine surfaces are .002 per inch, to a max of .012 inches for a single surface.
5. Machine diameters on a common centerline must be concentric within .005 T.I.R & unmachined diameters concentric within .032 T.I.R

△1 or ⬡1 = Revision Number
1.000 = Critical Dimension 100% Inspection Required

SHEET 1 of 2

SUPERIOR Manufacturing & Hydraulics
4225 HWY.90 E
BROUSSARD,LA 70518
(318)837-8847

PART NAME: SEALED IDLER BEARING

PART #: 1905
DRAWN BY:
APPROVED BY:
CHK BY: DATE:
REF: ILL1000/ILL1142.DWG

MATERIAL SPECIFICATION
Matl.Req:
Initial Condition:
Alternative Matl:
H.T Instructions: Case Depth: C.D

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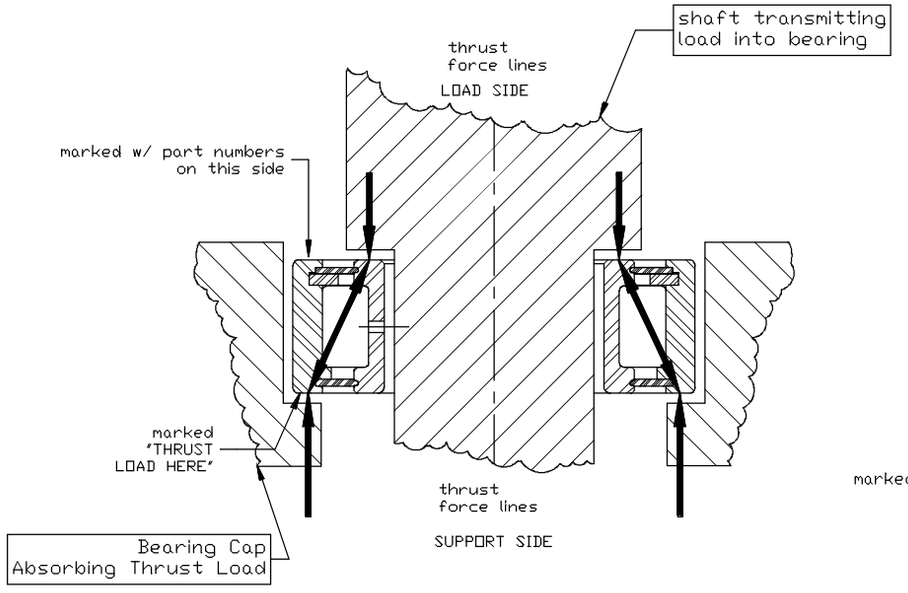
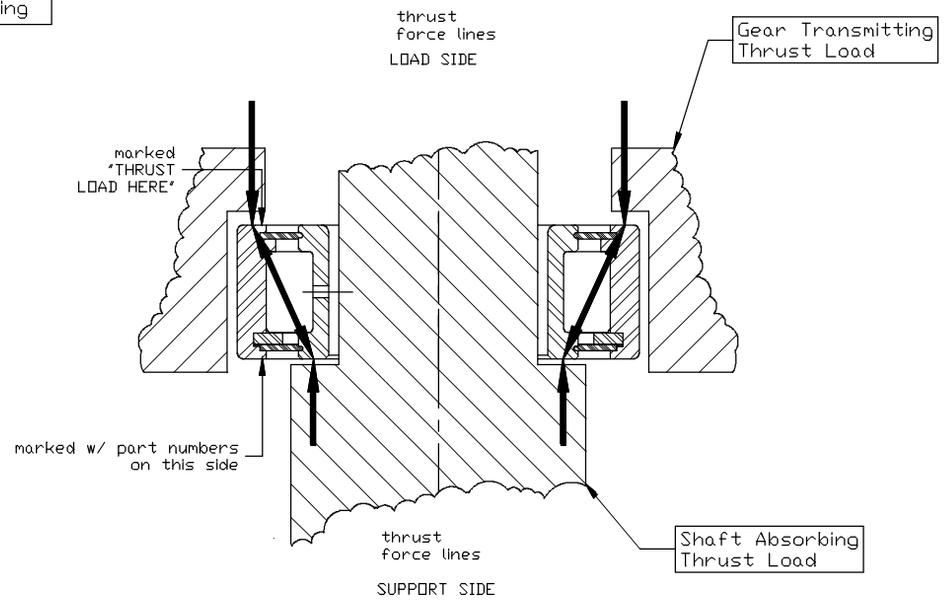


Bottom Bearing Cap Application



Gear Support Application

Installation instructions for **CLINCHER®** BEARING Part Number 1905

Rev.#	By	Log#	Description of Revision
3			
2			
1	DB	12/07/02	added desc of thrust load capability

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UNLESS OTHERWISE SPECIFIED TOLERANCES ARE — R3

2 PLACE DEC. ±.020	3 PLACE DEC. ±.005	FRACTIONS ± 1/16	ANGLES ± .5°	SURFACE 250	FLATNESS AR PL. ± .015 per foot

1. Dimensions are in inches
2. Remove burrs & sharp edges with 1/64x45°max.
3. Machined fillet radii are 1/32
4. Normality,Squareness & parallelism of machine surfaces are .002 per inch, to a max of .012 inches for a single surface.
5. Machine diameters on a common centerline must be concentric within .005 T.I.R & unmachined diameters concentric within .032 T.I.R

1 or 1 = Revision Number

1.000 = Critical Dimension 100% Inspection Required

SHEET 2 of 2

SUPERIOR Manufacturing & Hydraulics
4225 HWY.90 E
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(318)837-8847

PART NAME: Installation instructions for P/N 1905 SEALED IDLER BEARING

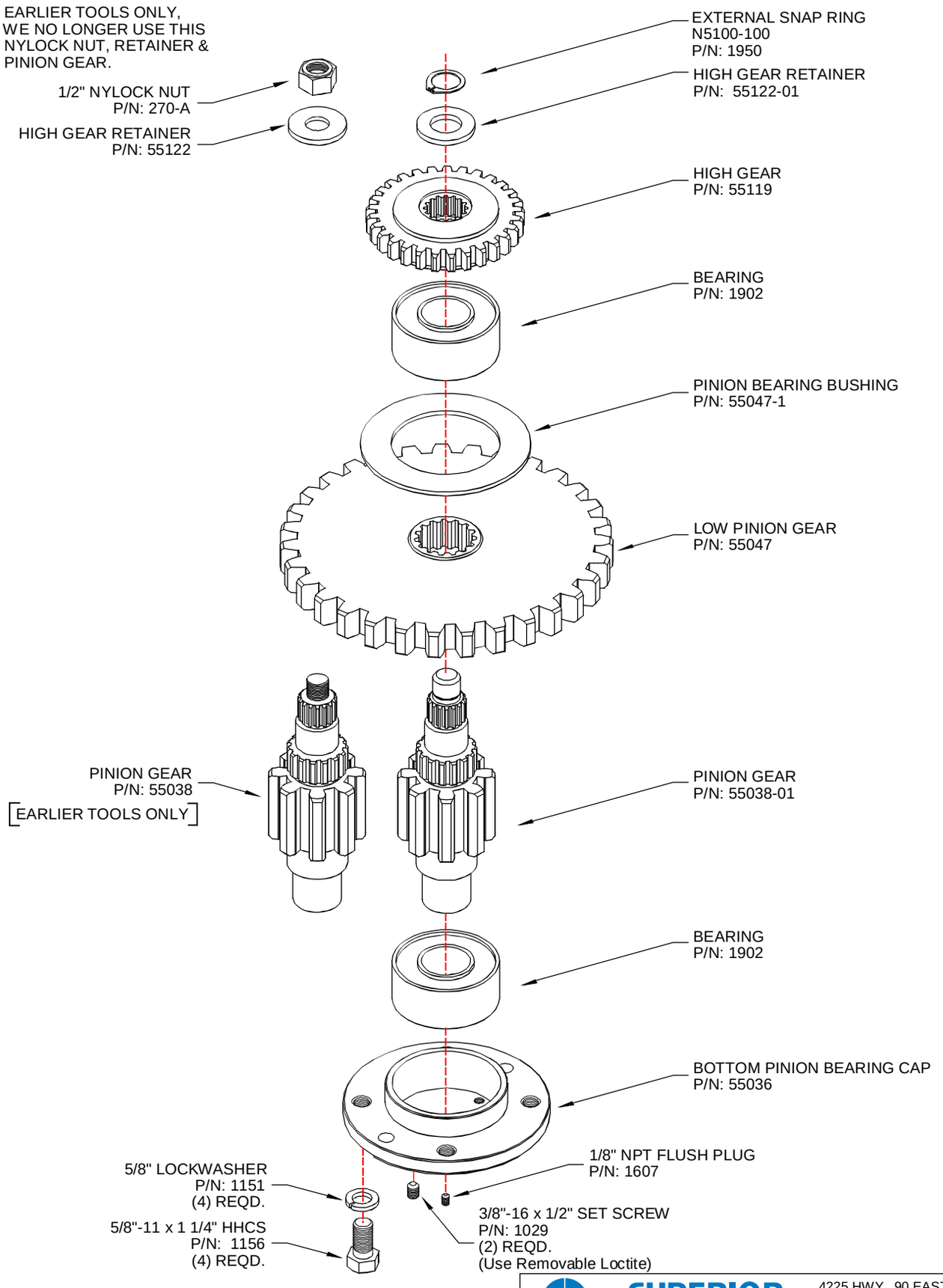
PART #: 1905 | MATERIAL SPECIFICATION

DRAWN BY: | Matl.Req:

APPROVED BY: | Initial Condition:

CHK BY: DATE: | Alternative Matl:

REF: REF ILL1000/ILL1142.DWG | H.T Instructions: Case Depth: C.D



PINION GEAR ASSEMBLY

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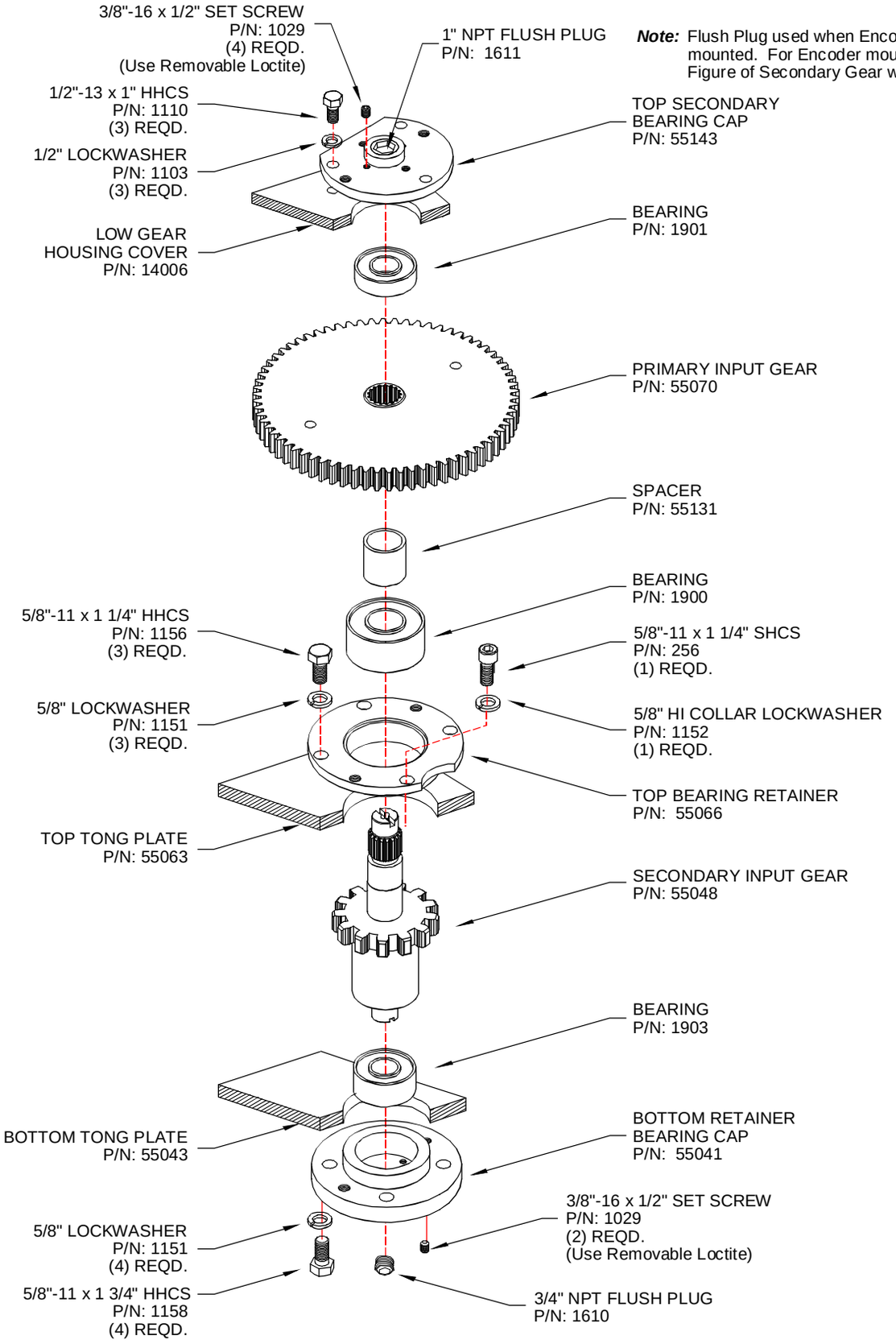
		11/07/01
REV. #	LOG #	DATE

REF: S:\Equip Manuals-Dwgs\CLE5500\Pinion Gear.wpg



SECONDARY GEAR ASSEMBLY

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REV. #	LOG #	DATE
1		03/03/04

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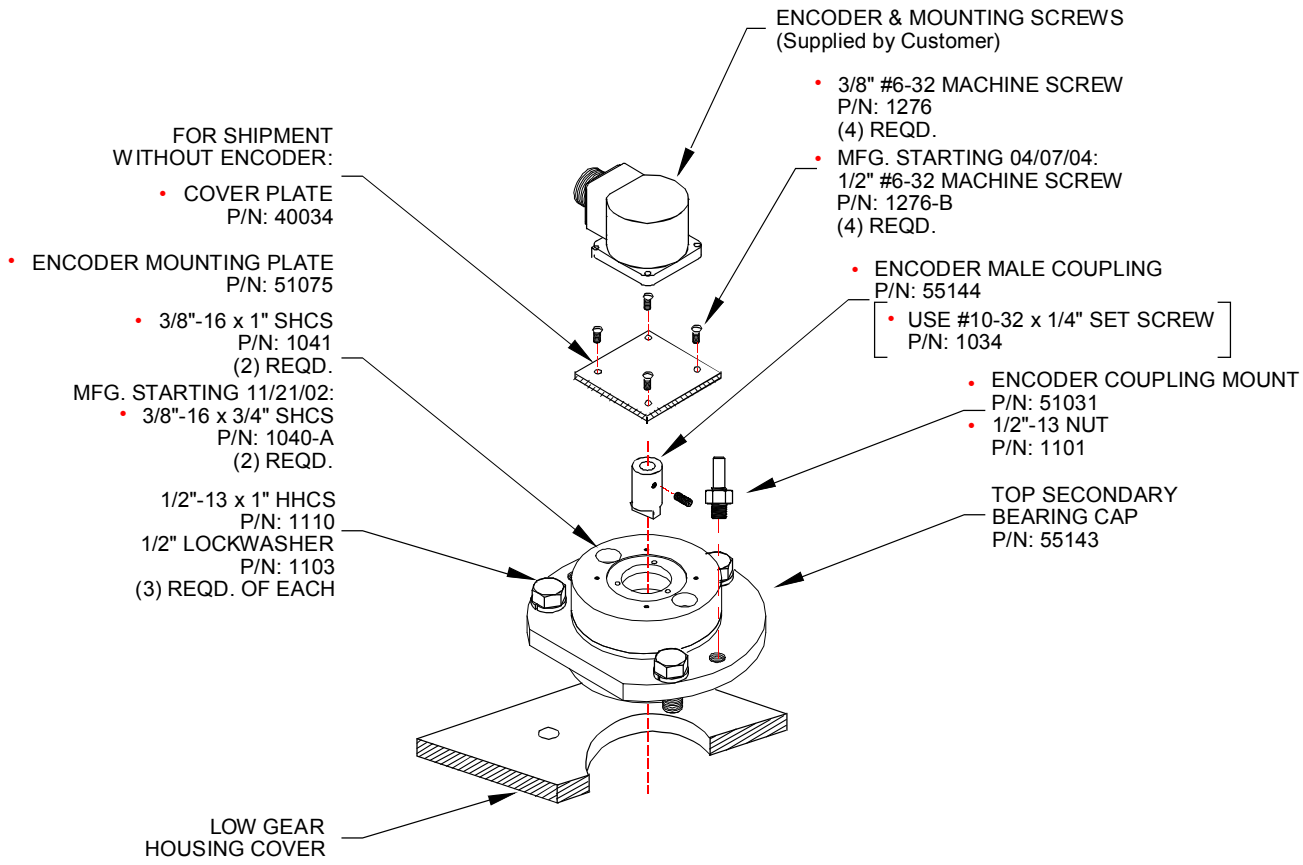

ENCODER ASSEMBLY

ENCODER ASSEMBLY NO. 55142 •

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REV. #	LOG #	DATE
2		12/09/04

REF: S:\Equip Manuals-Dwgs\CLE5500\Encoder rev2.wpg

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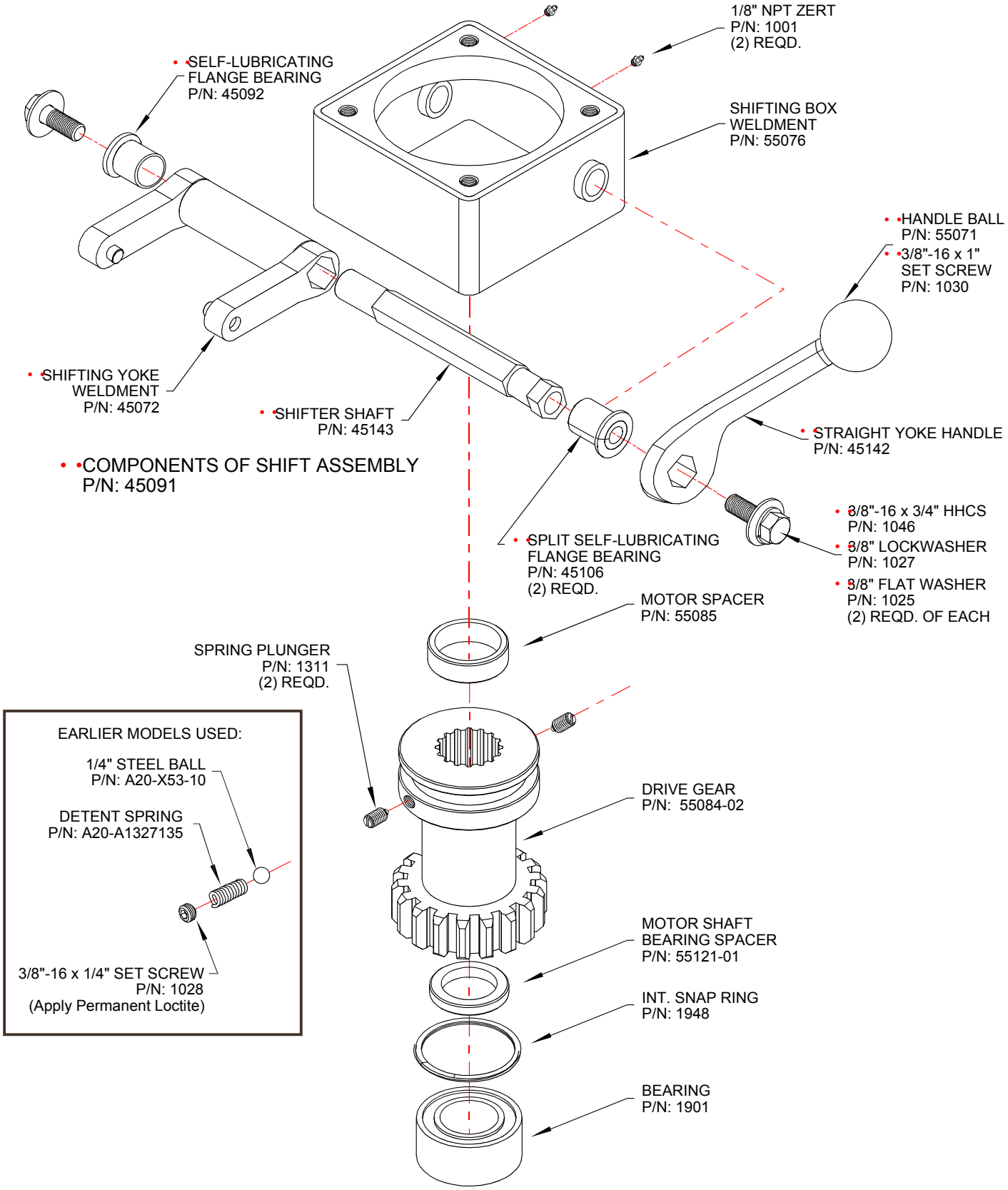

SHIFTING GEAR ASSEMBLY

2nd GENERATION
Model CLE5500-15B, Mfg. 11/2000 & After

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REV. #	LOG #	DATE
3		08/17/05

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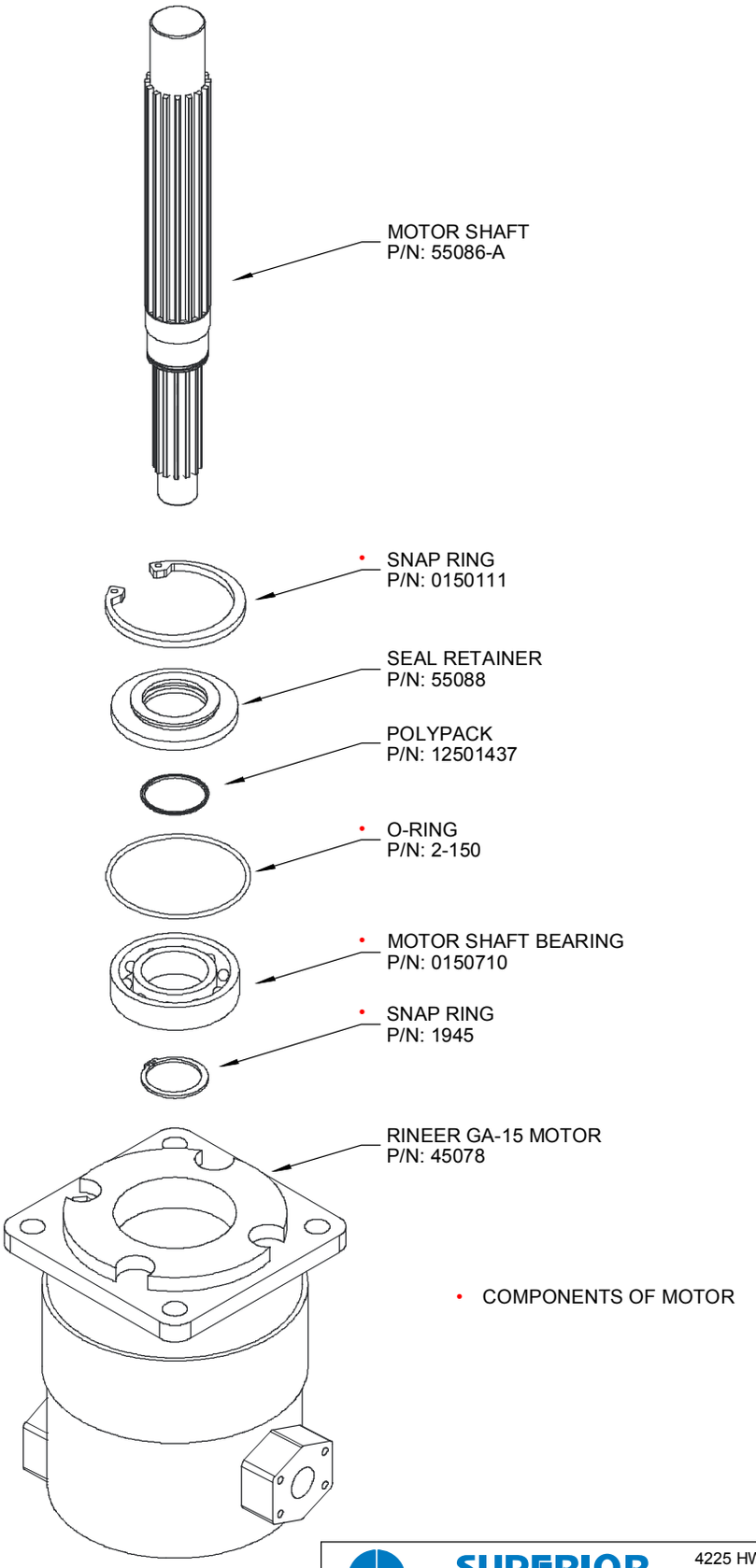

• COMPONENTS OF MOTOR

MOTOR ASSEMBLY

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		12/26/01
REV. #	LOG #	DATE

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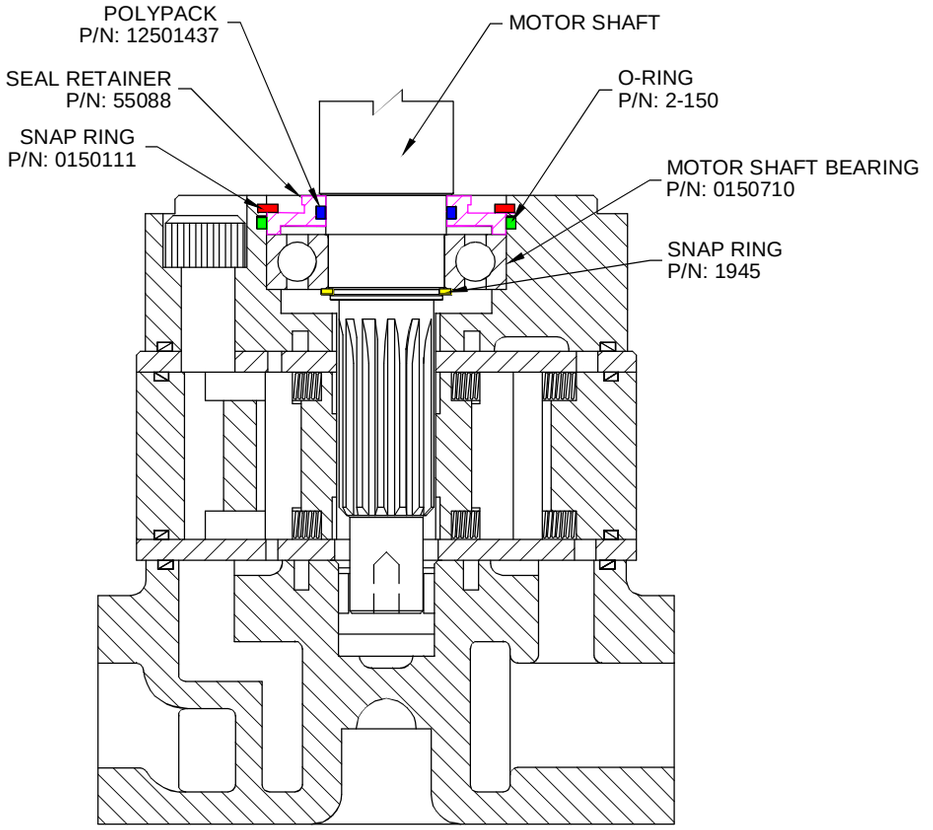

W/ OUT WIPER RING

MOTOR ASSEMBLY

FOR CLARITY PURPOSE ONLY
NOT TO SCALE

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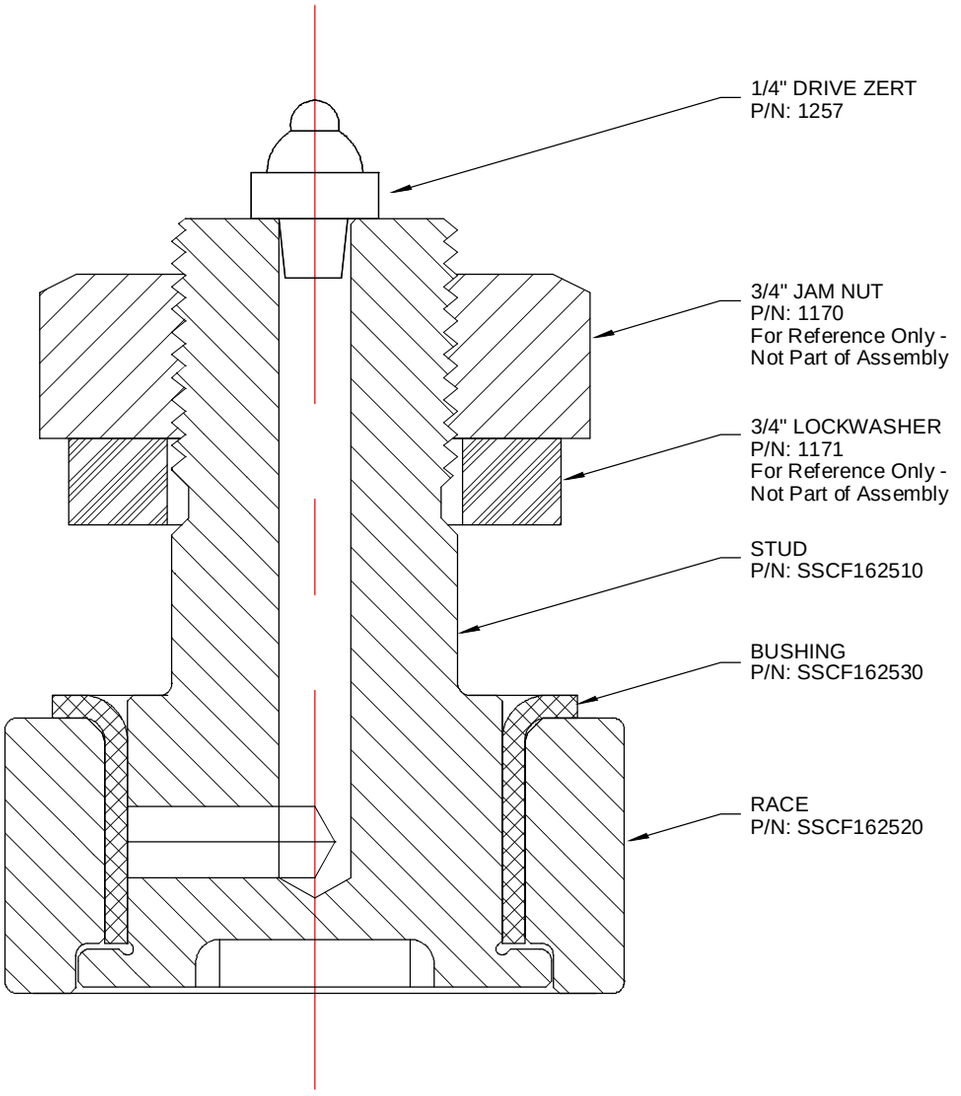
2		04/29/03
REV. #	LOG #	DATE

REF: S:\Equip Manuals-Dwgs\Motor\Motor CLE5500+ sht2 rev2.wpg



FOR TONG MODEL CLE5500-15B

1.625" SEVERE SERVICE CAM FOLLOWER ASSEMBLY

ASSEMBLY NO. SSCF162500

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		11/12/01
REV. #	LOG #	DATE

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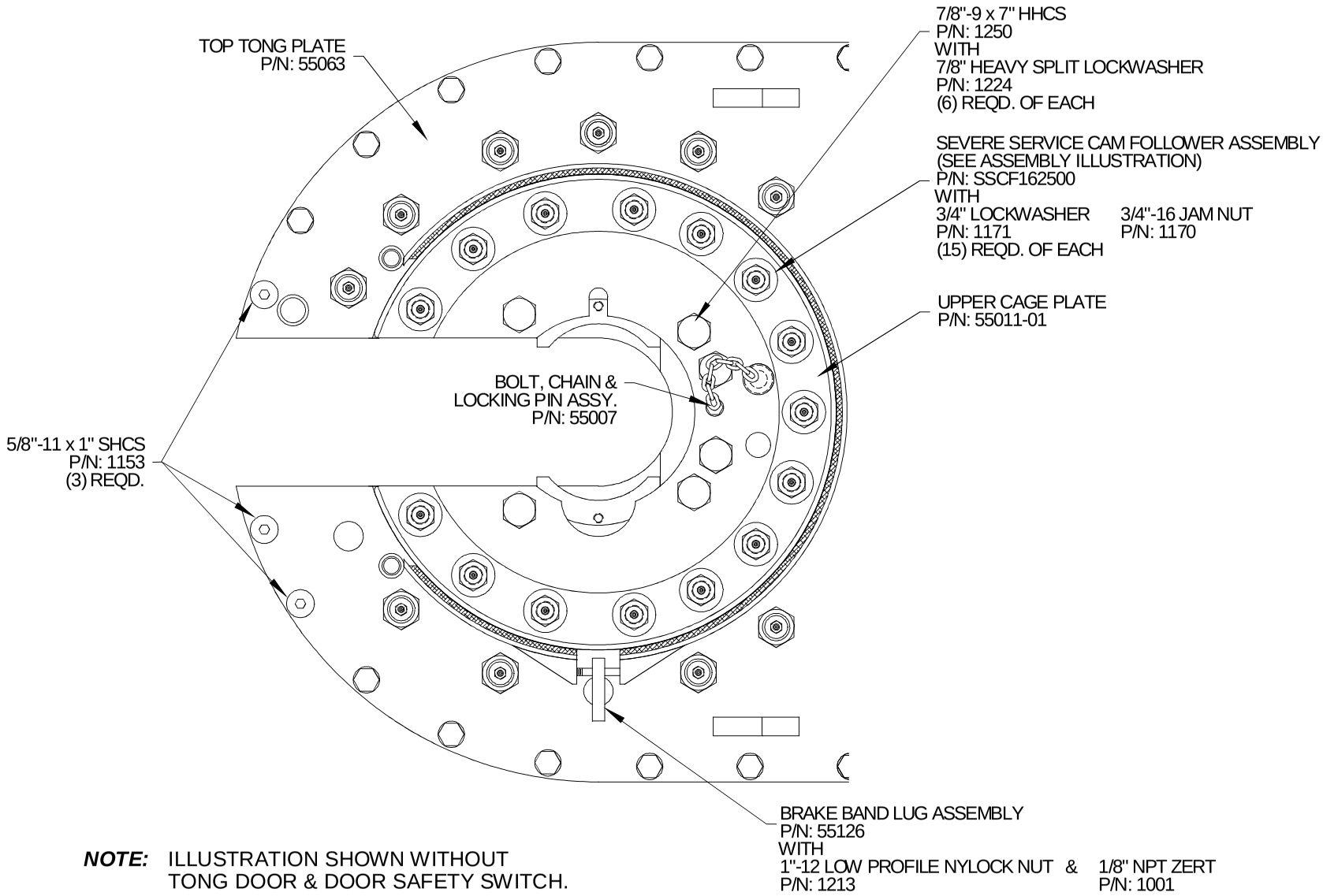

NOTE: ILLUSTRATION SHOWN WITHOUT TONG DOOR & DOOR SAFETY SWITCH.

TOP CAGE PLATE ASSEMBLY

MODEL CLE5500-15B

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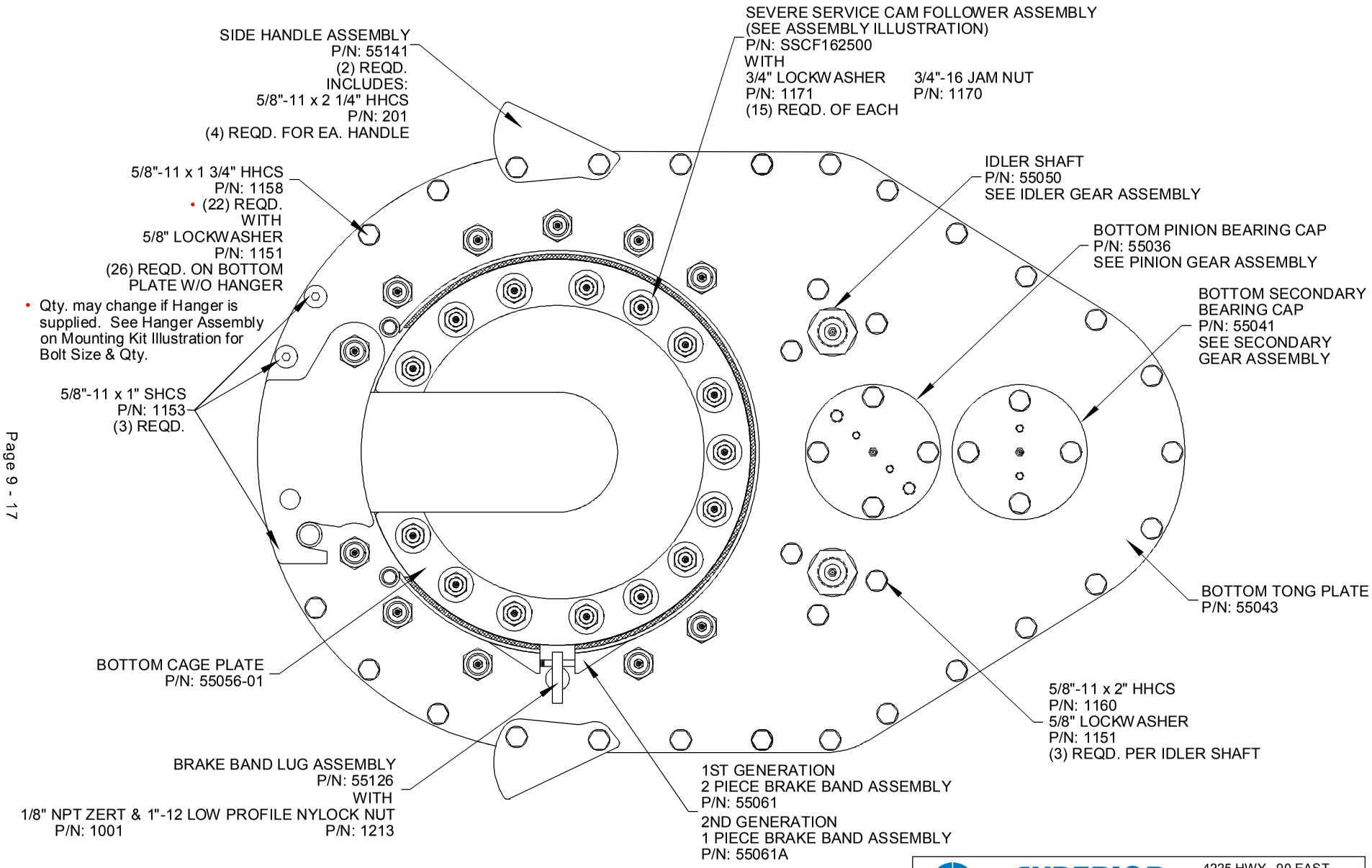
		11/13/01
REV. #	LOG #	DATE

REF: S:\Equip Manuals\Dwgs\CLE5500\Cage Plate Top-15B.wpg



BOTTOM VIEW

MODEL CLE5500-15B

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4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847

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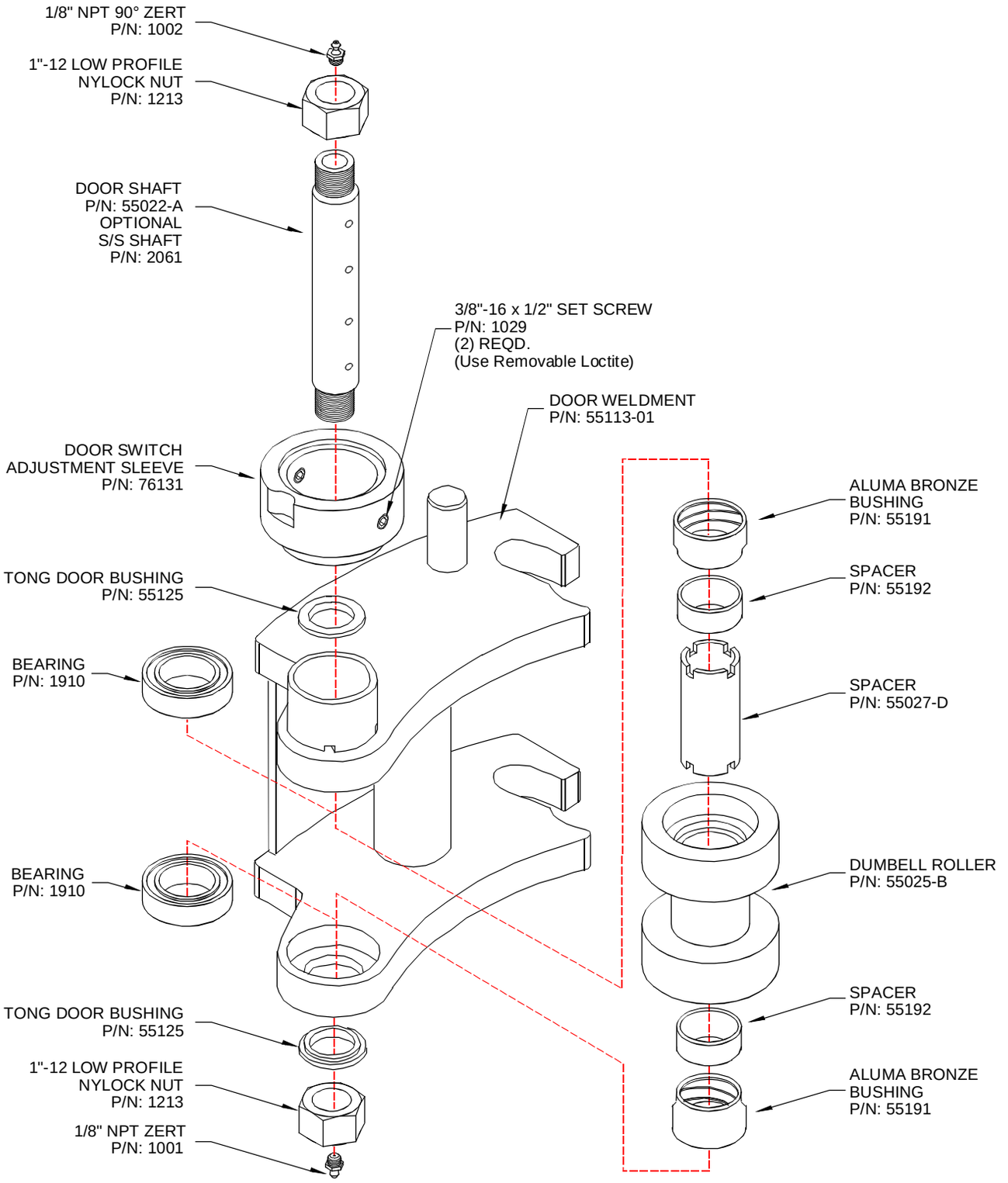
REV. #	LOG #	DATE
1		09/22/04

REF: S:\Equip Manuals\Dwgs\CLE5500\Bottom View-15B rev1.wpg



TONG DOOR ASSEMBLY

4th GENERATION
Model CLE5500-15B

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REV. #	LOG #	12/07/01 DATE

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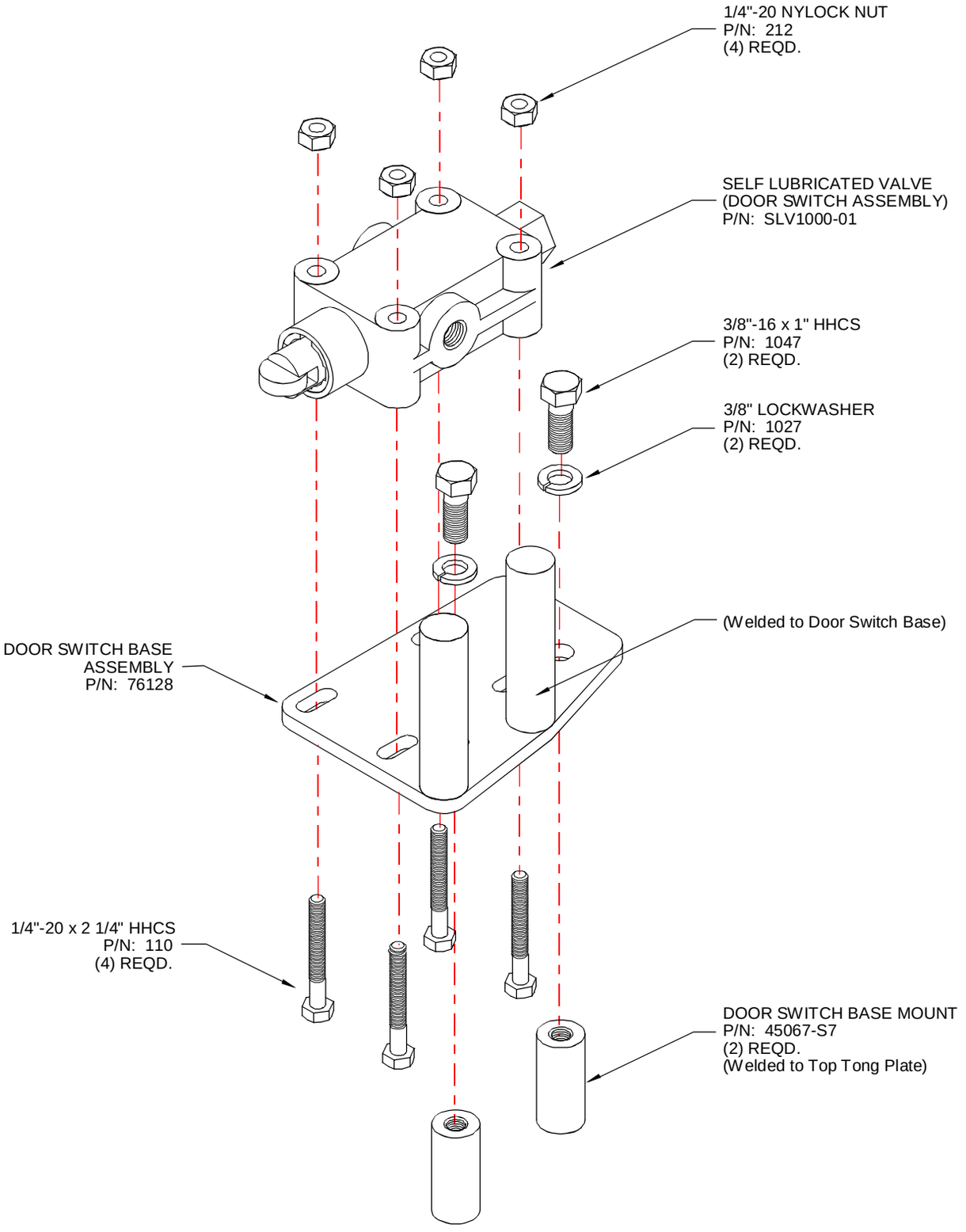

DOOR SWITCH ASSEMBLY

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		06/22/00
REV. #	LOG #	DATE

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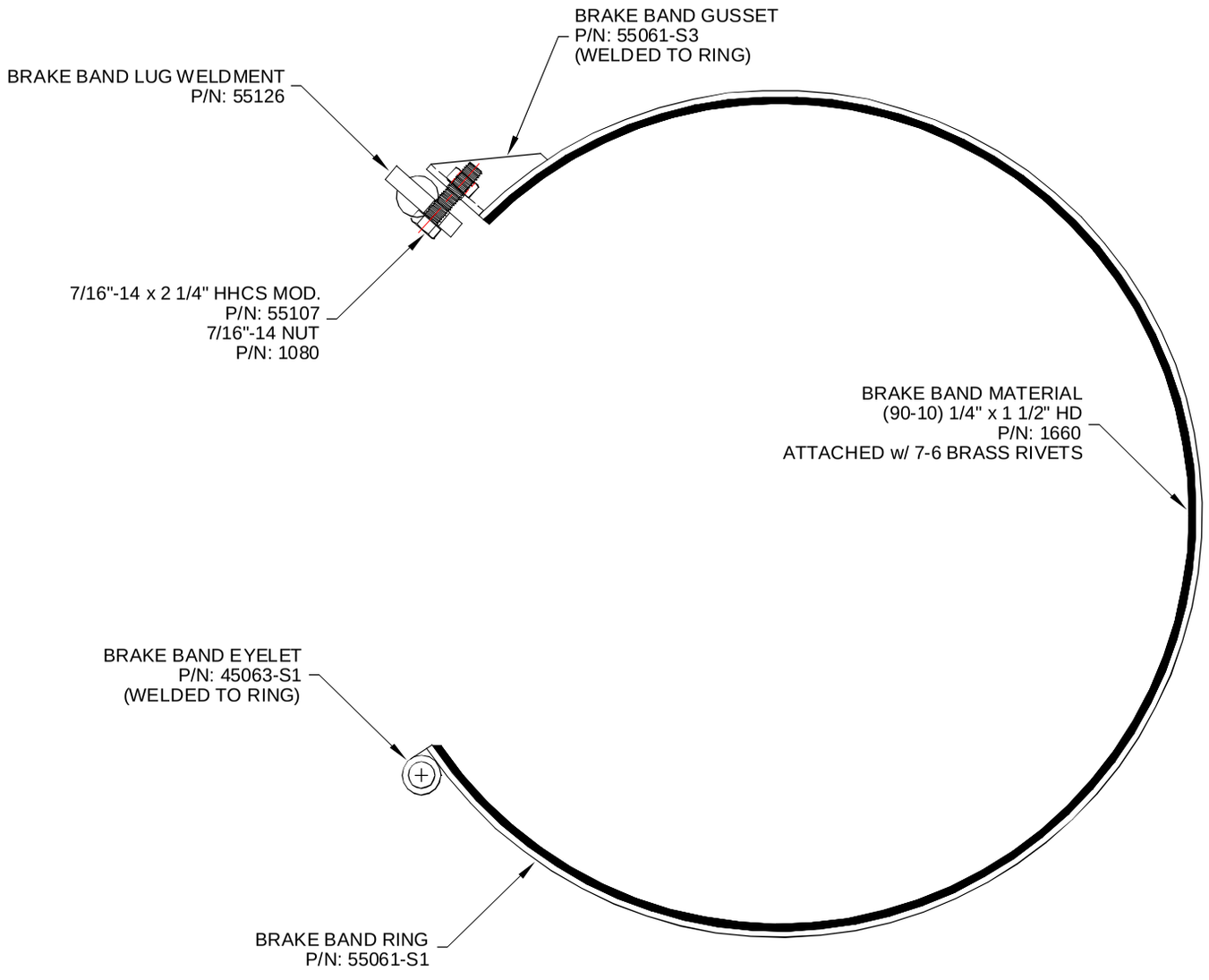

BRAKE BAND ASSEMBLY

ASSEMBLY NUMBER 55061A

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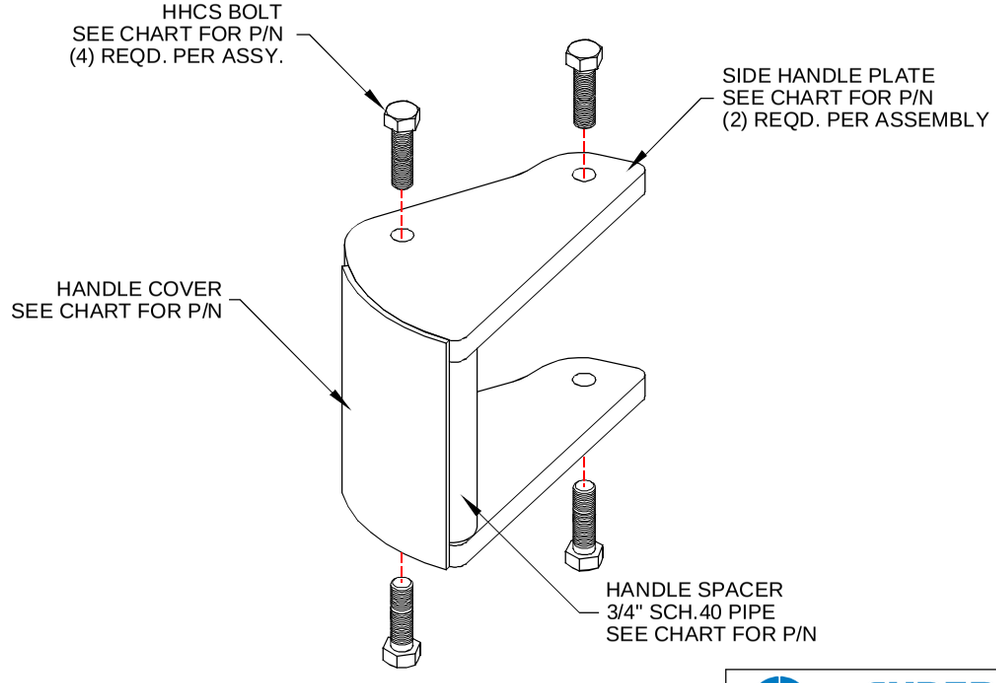
REV. #	LOG #	DATE
1		05/06/03

REF: S:\Equip Manuals-Dwgs\CLE5500\Brake Band Assy rev1.wpg

TONG	ASSEMBLY NUMBER	HANDLE SPACER PIPE PART NO.	HANDLE COVER PLATE PART NO.	SIDE HANDLE PLATE PART NO.	HHCS BOLT	
					PART NO.	SIZE
4 1/2 STANDARD	41111	41111-S1	41111-S2	45121	143	3/8"-16 x 2 1/4"
5 1/2 STANDARD	51111	51111-S1	51111-S2	45119	143	3/8"-16 x 2 1/4"
5 1/2 LOCKJAW	58086	51111-S1	51111-S2	45121	143	3/8"-16 x 2 1/4"
5 1/2 UHT & XHT	55141	73017-S1	55141-S2	55200	201	5/8"-11 x 2 1/4"
5 1/2 XHT01	59067	73017-S1	73017-S2	59067-S1	201	5/8"-11 x 2 1/4"
7 5/8 STANDARD	76133	73017-S1	55141-S2	55200	201	5/8"-11 x 2 1/4"
7 5/8 DRILL PIPE -35	73017	73017-S1	73017-S2	14035	201	5/8"-11 x 2 1/4"
7 5/8 LOCKJAW	(2) 73095	73095-S1	73095-S2	14035-01	201	5/8"-11 x 2 1/4"
7 5/8 & 8 5/8 DRILL PIPE -60 & -03	(1) 74095	73095-S1	73095-S2	14035-02	201	5/8"-11 x 2 1/4"



SIDE HANDLE ASSEMBLY

SEE CHART FOR ASSEMBLY NUMBER

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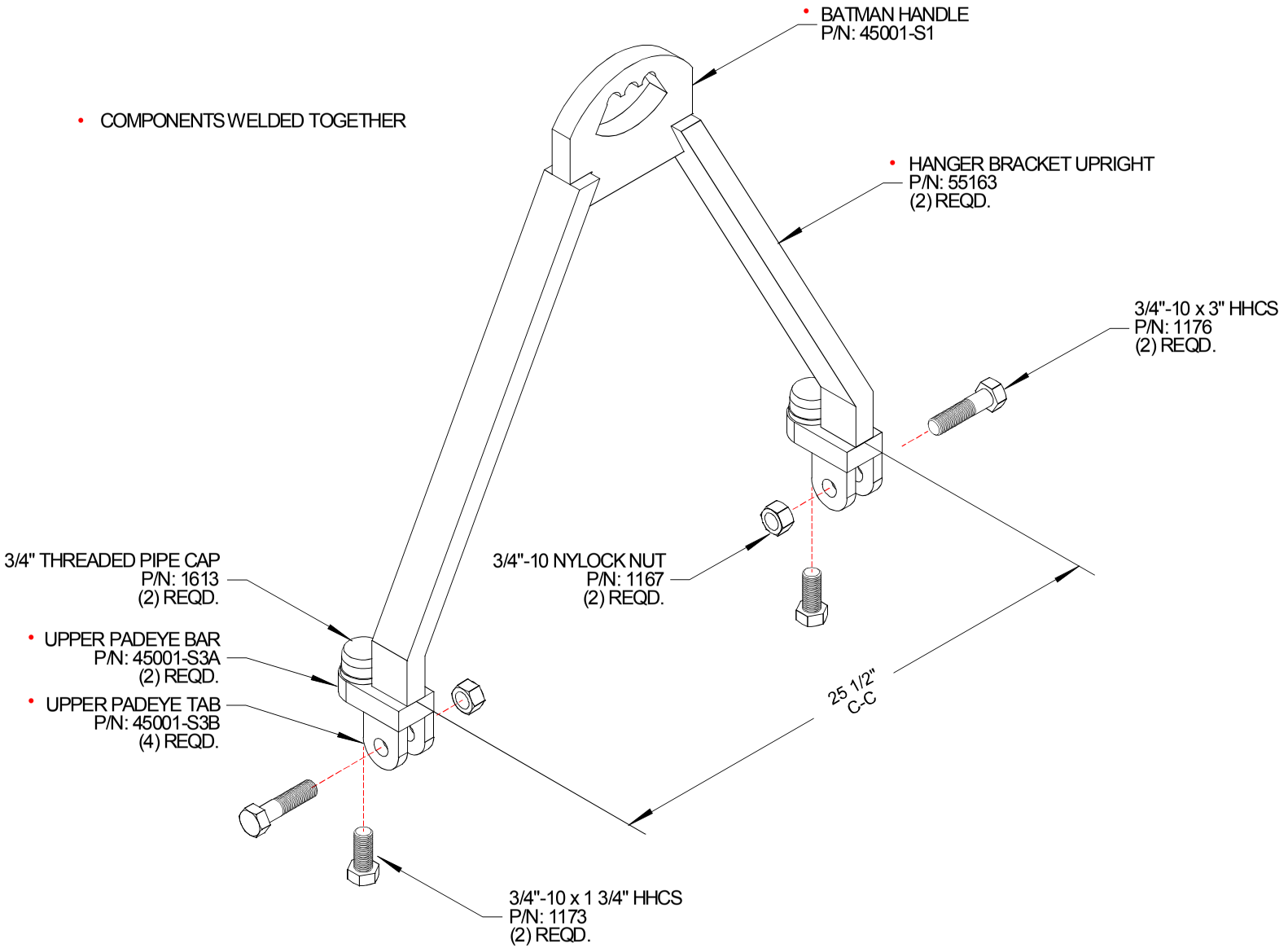
REV. #	LOG #	DATE
5		08/15/02

REF: S:\Equip Manuals-Dwgs\ILL1087 Side Hdle Assy rev5.wpg



HANGER BRACKET ASSEMBLY

ASSEMBLY NO. 55001

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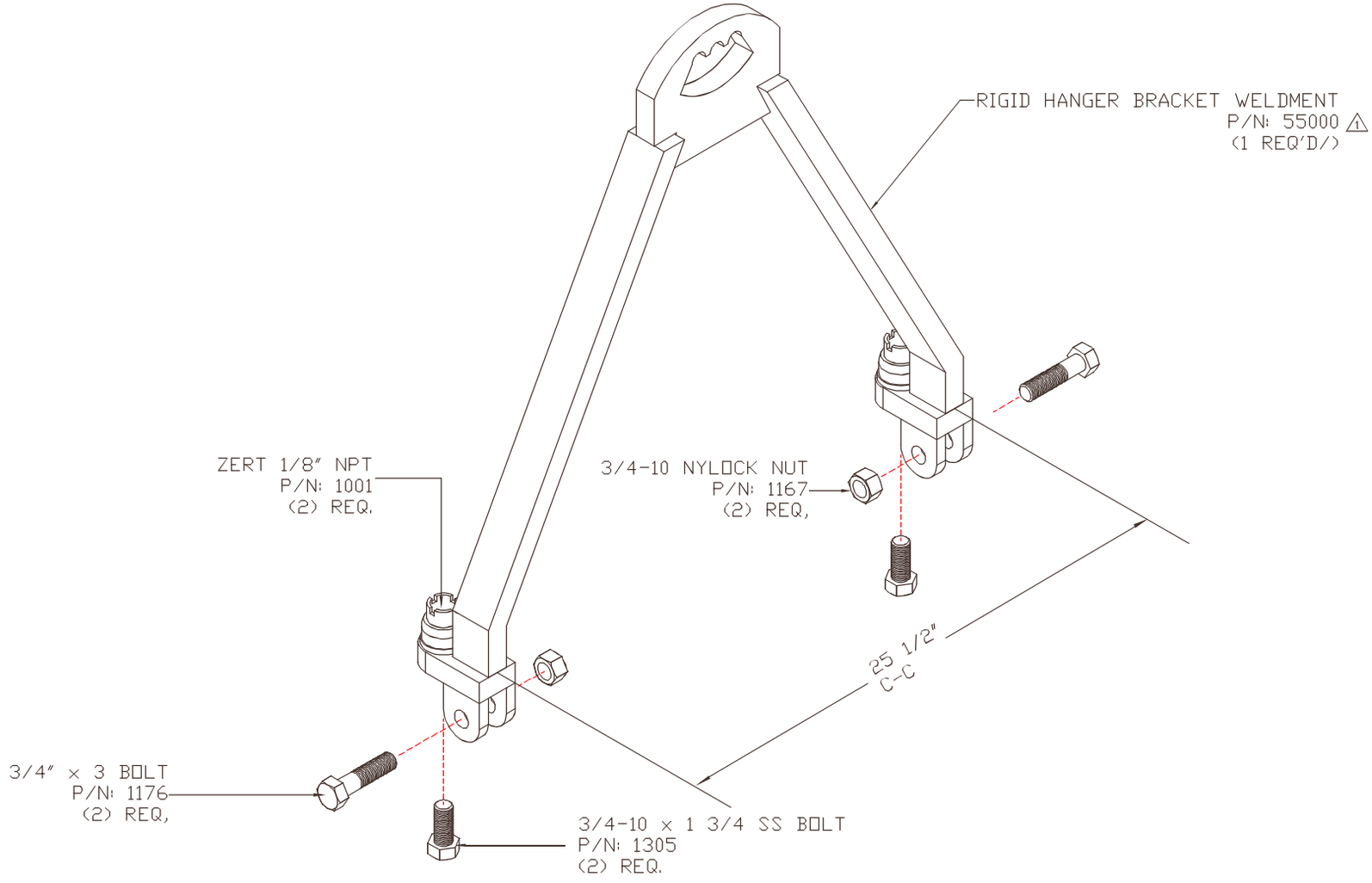
		11/14/01
REV. #	LOG #	DATE

REF: S:\Equip Manuals\Dwgs\CLE5500\Hanger 55001.wpg



Rev.#	By	Log#	Description of Revision
6			
5			
4			
3			
2			
1	CN	01-08-02	REV. TO REFLECT UPDATE TO PICKLIST.

1/8 LS STAMP P/N & W.O ON NON-CRITICAL SURFACE

ETCH P/N & W.O ON NON-CRITICAL SURFACE

TAG P/N & W.O

UNLESS OTHERWISE SPECIFIED TOLERANCES ARE — R6

2 PLACE DEC. ±.020	3 PLACE DEC. ±.005	FRACTIONS ± 1/16	ANGLES ± .5'	SURFACE 250	FLATNESS AR PL. ± .015 per foot

1. Dimensions are in inches
2. Remove burrs & sharp edges with 1/64x45°max.
3. Machined fillet radii are 1/32
4. Normality,Squareness & parallelism of machine surfaces are .002 per inch, to a max of .012 inches for a single surface.
5. Machine diameters on a common centerline must be concentric within .005 T.I.R & unmachined diameters concentric within .032 T.I.R

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⚠1 1=Revision No. X=STAMP,ETCH,TAG =Machine Zero

1.000 = Critical Dimension 100% Inspection Required

SHEET 1 of 1

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4225 HWY.90 E
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PART NAME: RIGID HANGER BRACKET ASSEMBLY
5 1/2 UHT

PART #: 55001-03

DRAWN BY: MIXAY

APPROVED BY: DAN B

CHK BY: NM DATE: 2-24-00

REF: F:\DWG\55001-03

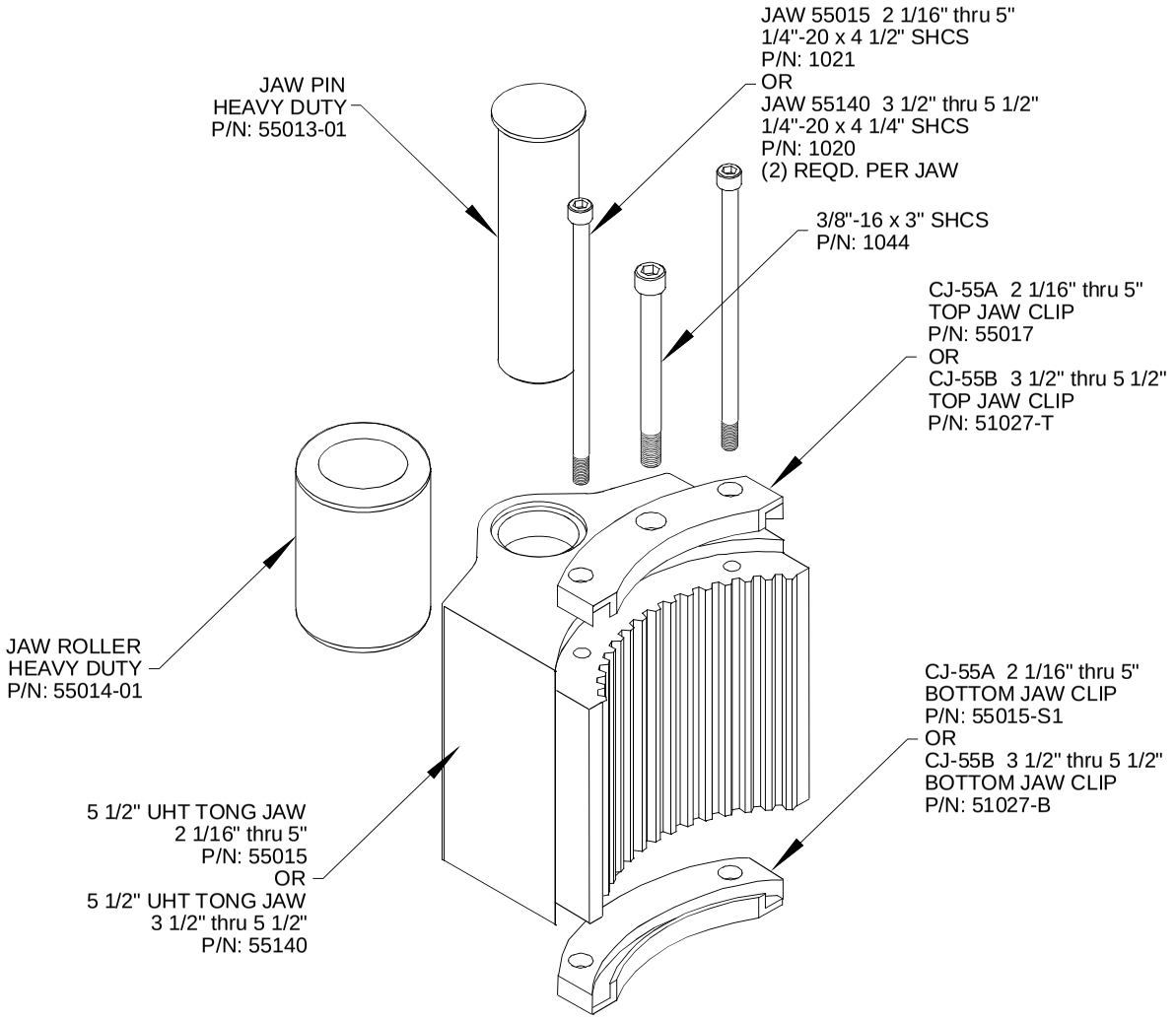
MATERIAL SPECIFICATION

Matl.Req:

Initial Condition:

Alternate Matl:

H.T Instructions: Case Depth:



5 1/2" UHT TONG JAW ASSEMBLY

3 1/2" thru 5" UHT Assembly Number CJ-55A
3 1/2" thru 5 1/2" UHT Assembly Number CJ-55B

Note: For Maximum Performance 2 1/16" thru 3 1/2"
We Recommend CJ-LF-55A

(2) Required
(Right & Left Jaw are reversible and interchangeable)

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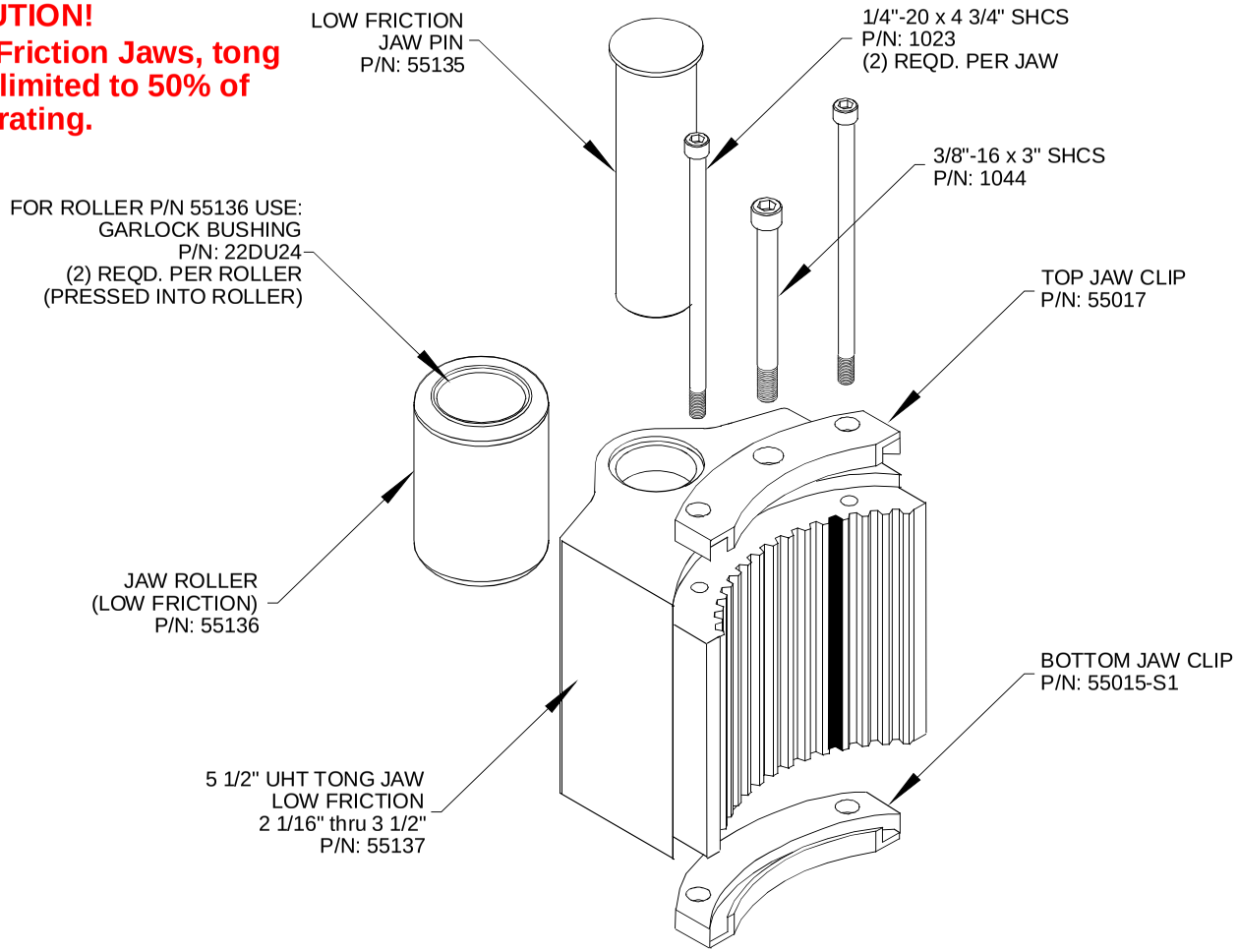
1		04/16/02
REV. #	LOG #	DATE

REF: P:\Manuals\Equip Manuals\Dwgs\CLE5500\Jaw Assy rev 1.wpg

CAUTION!
When using Low Friction Jaws, tong torque should be limited to 50% of maximum torque rating.



5 1/2" UHT TONG
LOW FRICTION JAW ASSEMBLY

2 1/16" thru 3 1/2" UHT LF Assembly Number CJ-LF-55A

(2) Required
(Right & Left Jaw are reversible and interchangeable)

FOR USE WITH:
CLE5500XXXX FINE TOOTH STEEL DIES TO 3 1/2"
CLFA5500XXXX ALUMINUM DIES TO 5"

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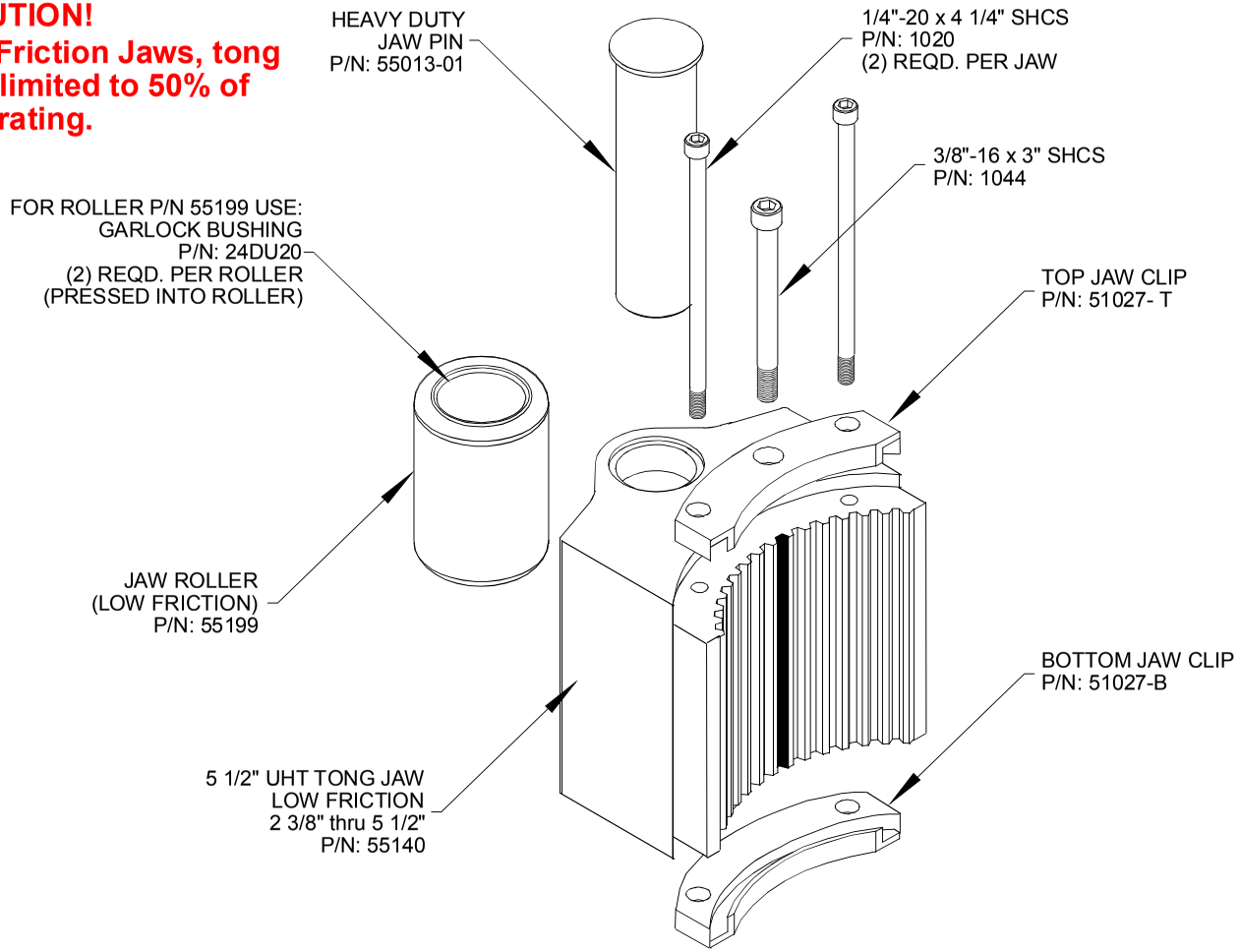
REV. #	LOG #	DATE
3		11/01/05

REF: P:\Manuals\Equip Manuals\Dwgs\CLE5500\Jaw Assy LF rev3.wpg

CAUTION!
When using Low Friction Jaws, tong torque should be limited to 50% of maximum torque rating.



5 1/2" UHT TONG
LOW FRICTION JAW ASSEMBLY

2 3/8" thru 5 1/2" UHT LF Assembly Number CJ-LF-55B

(2) Required
(Right & Left Jaw are reversible and interchangeable)

FOR USE WITH:
CLJ5501XXXX FINE TOOTH STEEL DIES
CLJA5501XXXX ALUMINUM DIES
BB5601XXXX **GRIT FACE™** DIES

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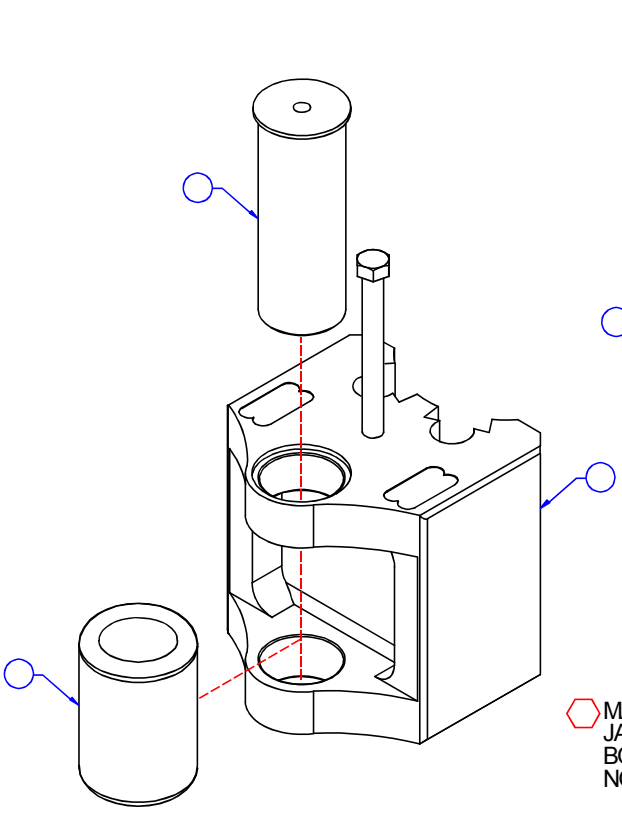
		04/14/05
REV. #	LOG #	DATE

REF: P:\\ManualsEquip Manuals\Dwgs\CLE5500\Jaw Assy CJ-LF-55B.wpg

Size	Jaw Set Assembly Number	Dovetail Jaw Part Number
2 3/8" ⬡	CJDT55-02375	55190-02375
2 7/8"	CJDT55-02875	55190-02875
3 1/8"	CJDT55-03125	55190-03125
3 3/8"	CJDT55-03375	55190-03375
3 1/2"	CJDT55-03500	55190-03500
3 5/8" ⬡	CJDT55-03625	55190-03625
3 3/4" ⬡	CJDT55-03750	55190-03750

Size	Jaw Set Assembly Number	Dovetail Jaw Part Number
4"	CJDT55-04000	55190-04000
4 1/8" ⬡	CJDT55-04125	55190-04125
4 1/4" ⬡	CJDT55-04250	55190-04250
4 1/2"	CJDT55-04500	55190-04500
4 3/4"	CJDT55-04750	55190-04750
4 7/8" ⬡	CJDT55-04875	55190-04875
5"	CJDT55-05000	55190-05000
5 1/2"	CJDT55-05500	55190-05500

Item	Qty.	Part Number	Description
1	2	SEE CHART	DOVETAIL JAW
2	2	55013-01	JAW PIN HEAVY DUTY
3	2	55014-01	JAW ROLLER HEAVY DUTY
4	4	DTI1601	1/2 x 1 1/4 x 3 7/8 DT INSERT
5	2	148	3/8"-16 x 4" HHCS
6	4	1027 ⬡	3/8" LOCK WASHER
7	4	1061	3/8"-16 x 3/4" BUTTON HD CS



⬡ MANUFACTURING BEGINNING 01/2001 JAW GEOMETRY WAS CHANGED. BOTTOM SCREWS & LOCK WASHERS NO LONGER USED.

5 1/2" UHT TONG
DOVETAIL JAW ASSEMBLY

(Right & Left Jaw are reversible and interchangeable)

Rev.	Date	Description
2	12/07/07	Added note regarding manuf. beginning 01/2001. Revised to show right & left jaws. Added Jaw Sizes 2 3/8", 3 5/8", 3 3/4" & 4 1/8".
1	09/24/04	Change PN of BH Cap Screw 134 to 1027. Added Jaw Sizes 4 1/4" & 4 7/8". Replaced DT Strip Die list with PN DTI1601 (2) supplied per jaw.

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REV. #	LOG #	DATE
2		12/07/07

REF: P:\Manuals\Equip Manuals\Dwgs\CLE5500\Jaw Dovetail rev2.wpg

SECTION 10 UHT & DP BACKUP ILLUSTRATIONS & MOUNTING KIT ILLUSTRATIONS

BUC5500-01 / 5 1/2" UHT BACKUP TOP VIEW ..... 10 - 3
5 1/2" UHT BACKUP TOP VIEW WITHOUT TOP PLATE ..... 10 - 4
5 1/2" UHT BACKUP BOTTOM VIEW ..... 10 - 5
BUC5523 / CYLINDER ASSEMBLY *(2nd Generation)* ..... 10 - 6
5 1/2" UHT BACKUP MOUNTING KIT *(Assembly No. MK5500)* ..... 10 - 7
VALVE BANK ASSEMBLY ..... 10 - 8
HYDRAULIC SCHEMATIC ..... 10 - 9
HYDRAULIC SCHEMATIC W/ MANIFOLD – MFG. BEGINNING 02/2007 ..... 10 - 10

BUCD5500 / 5 1/2" **LOCKJAW™** DP BACKUP ASSEMBLY ..... 10 - 11
BUCD5500 / 5 1/2" **LOCKJAW™** DP BACKUP ASSEMBLY W/O TOP PLATE ..... 10 - 12
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BUCD5535 / OUTSIDE DOOR ASSEMBLY ..... 10 - 16
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BUCDT5500 / 5 1/2" LJ DP TENSION STYLE BACKUP ASSY. W/O TOP PLATE ..... 10 - 16.2
DOVETAIL DIE ADAPTER ..... 10 - 17
5 1/2" **LOCKJAW™** DP BACKUP MOUNTING KIT *(Assembly No. MK5550)* ..... 10 - 18
5 1/2" LJ DP TENSION STYLE BACKUP MOUNTING KIT *(Assy. No. MKBUCT5550)* ... 10 18.1

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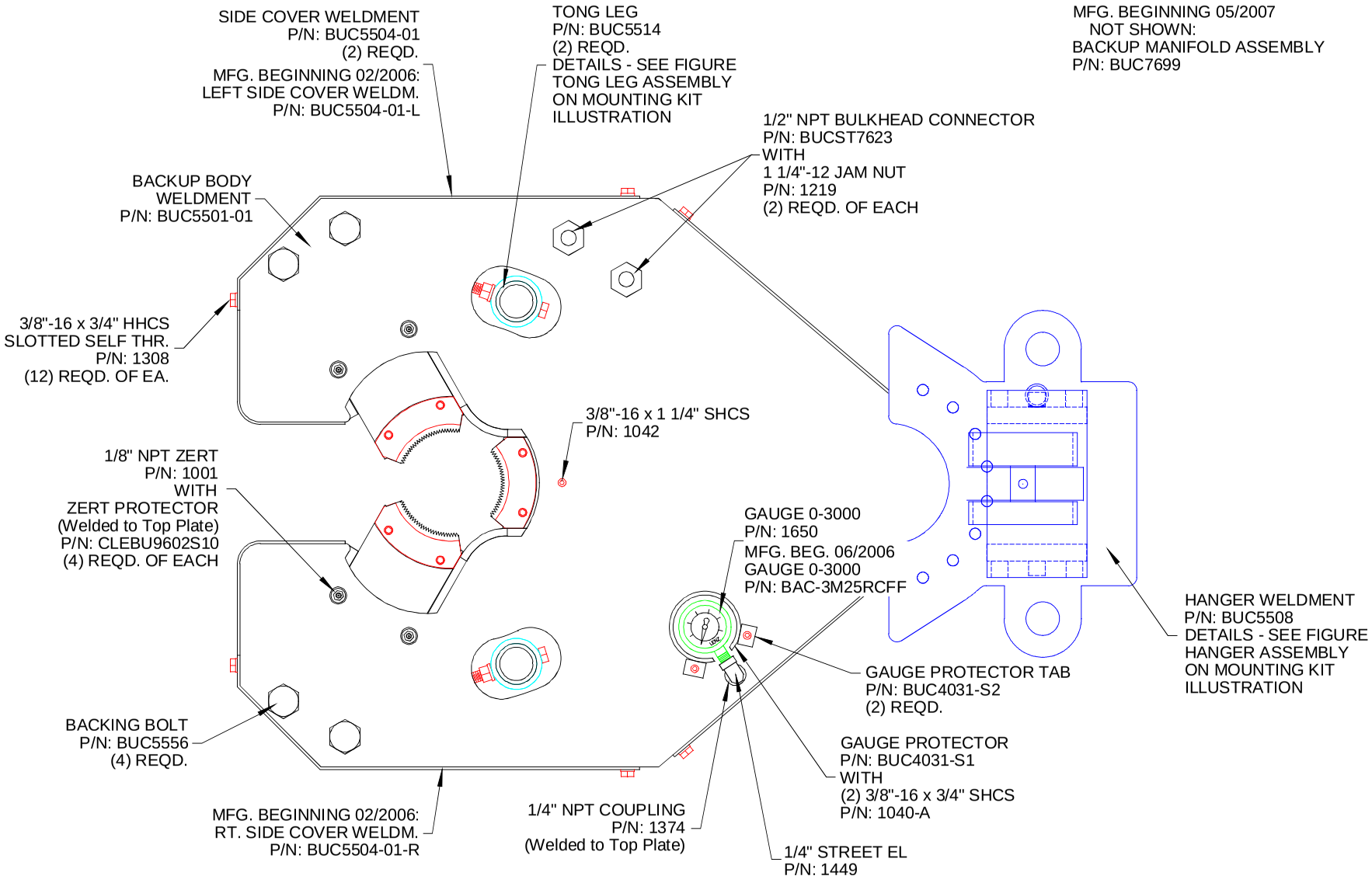
BUC6204 / CYLINDER ASSEMBLY ..... 10 - 20
BUC7632 / CENTER JAW ASSEMBLY ..... 10 - 21
6 1/4" UHT BACKUP MOUNTING KIT *(Assembly No. MK6250)* ..... 10 - 22
BUC6250-02 6 1/4" HYDRAULIC SCHEMATIC *(Assembly No. BUC7699-S1)* 10 - 23



BUC5500-01 / 5 1/2" UHT BACKUP

TOP VIEW

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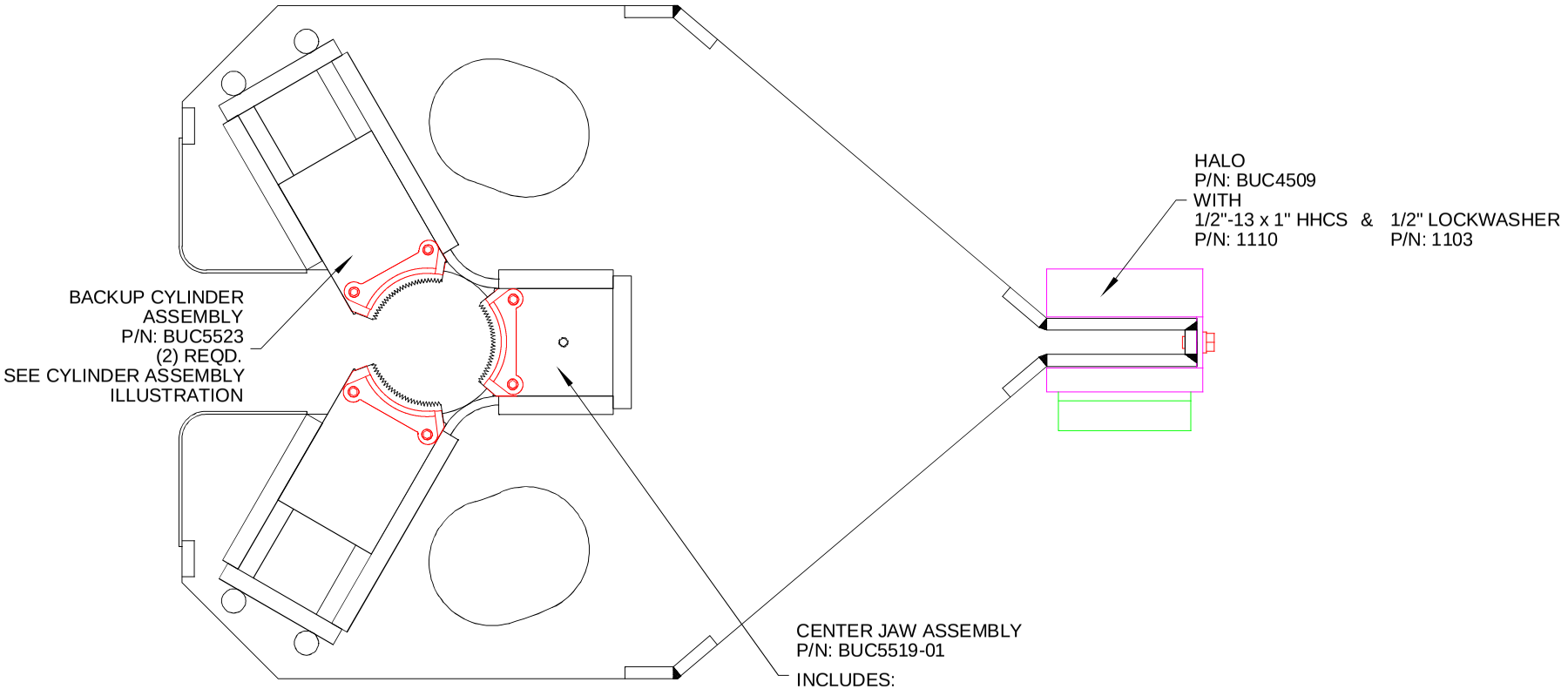
REV. #	LOG #	DATE
1		02/08/08

REF: P:\Manuals\Equip Manuals\Dwgs\BUC5500\Top View -01 rev1.wpg



5 1/2" UHT BACKUP
TOP VIEW WITHOUT TOP PLATE

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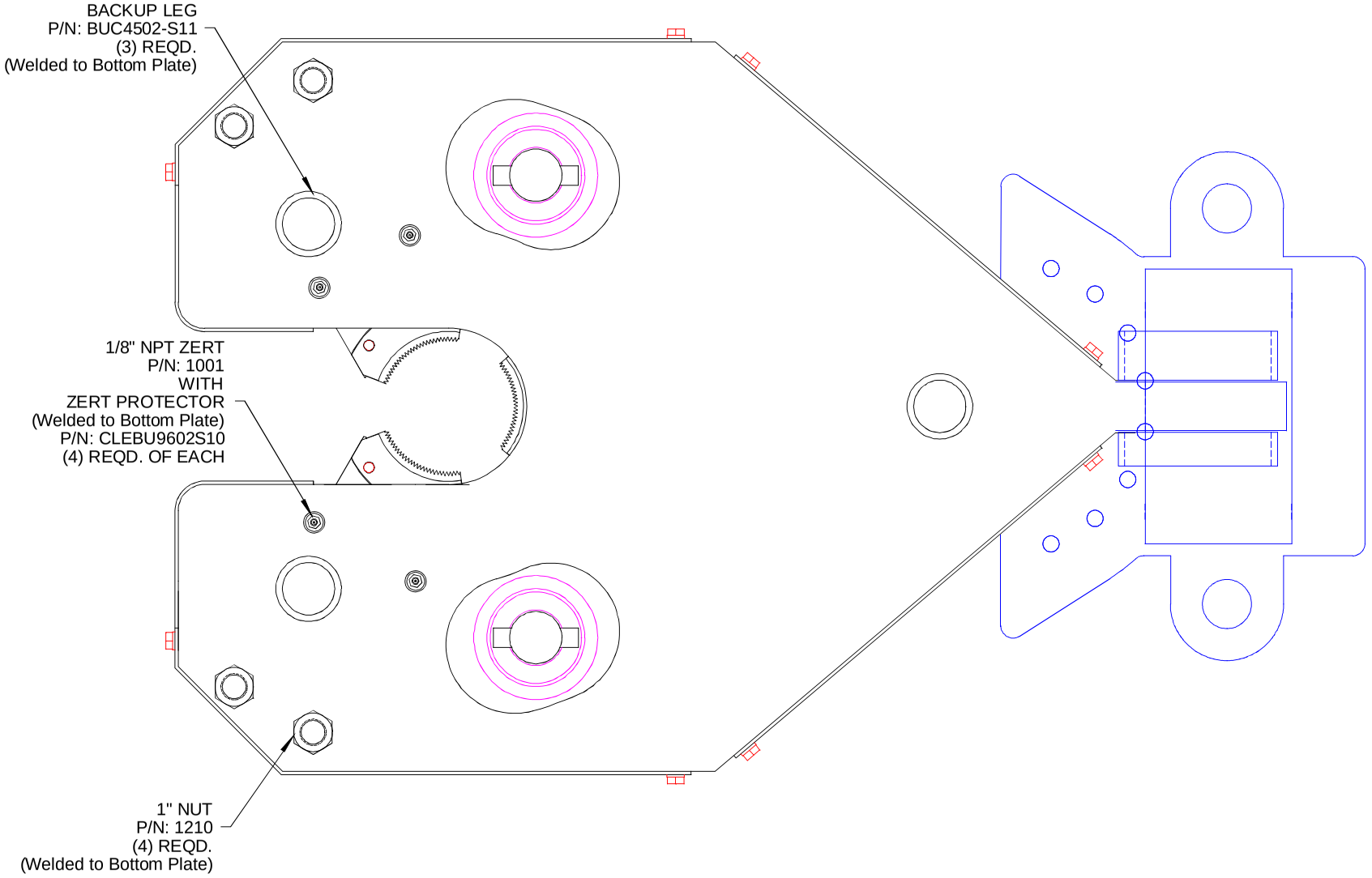
		12/26/01
REV. #	LOG #	DATE

REF: P:\Manuals\Equip Manuals\Dwgs\BUC5500-01\Top View wo Plate.wpg



5 1/2" UHT BACKUP
BOTTOM VIEW

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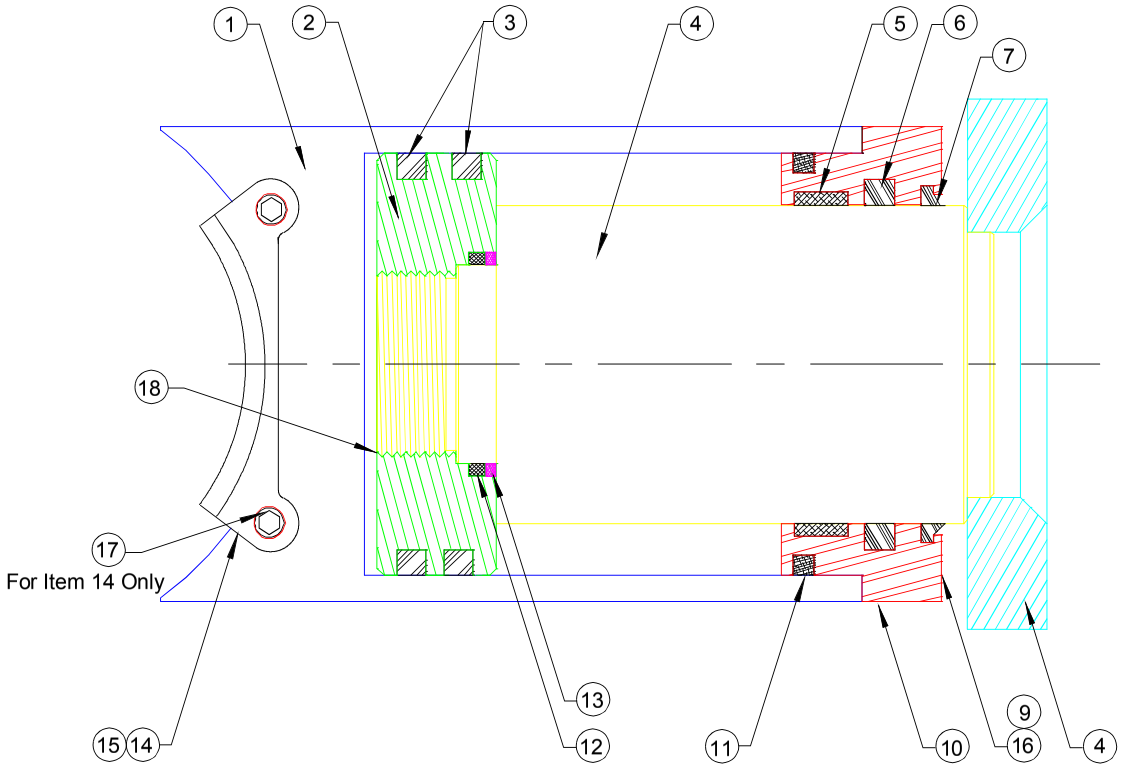
		11/20/01
REV. #	LOG #	DATE

REF: S:\Equip Manuals\Dwgs\BUC5500\Bottom View.wpg

- SEAL KIT NO. ASAP2226

BILL OF MATERIALS			
Item	Qty.	P/N	Description
1	1	BUC5565	Cylinder Housing Weldment
2	1	BUC5525	Piston
• 3	2	37504750	Polypack 4 3/4" x 5 1/2" x 3/8"
4	1	BUC5526	Rod Backing Plate Weldment
• 5	1	W47500625	Wearband
• 6	1	25004500	Polypack 4 1/2" x 5" x 1/4"
• 7	1	959-41	Rod Wiper
8	--	-----	-----
9	4	256	5/8"-11 x 1 1/4" SHCS
10	1	BUC5528	Gland
• 11	1	25005000	Polypack 5" x 5 1/2" x 1/4"
• 12	1	12502625	Polypack 2 5/8" x 2 7/8" x 1/8"
• 13	1	8-231	Backup Ring
14	1	CM5573	Die Clip (Top)
15	1	CM5573	Die Clip (Bottom) (Welded to Item 1)
16	4	1005-A	3/16" x 1/2" Roll Pin
17	2	1040-A	3/8"-16 x 3/4" SHCS
18	1	1008-B	1/4"-20 x 1/4" Set Screw



5 1/2" UHT BACKUP CYLINDER ASSEMBLY

2nd GENERATION
ASSEMBLY NO. BUC5523

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		11/20/01
REV. #	LOG #	DATE

REF: S:\Equip Manuals\Dwgs\BUC5500\Cylinder 2nd.wpg

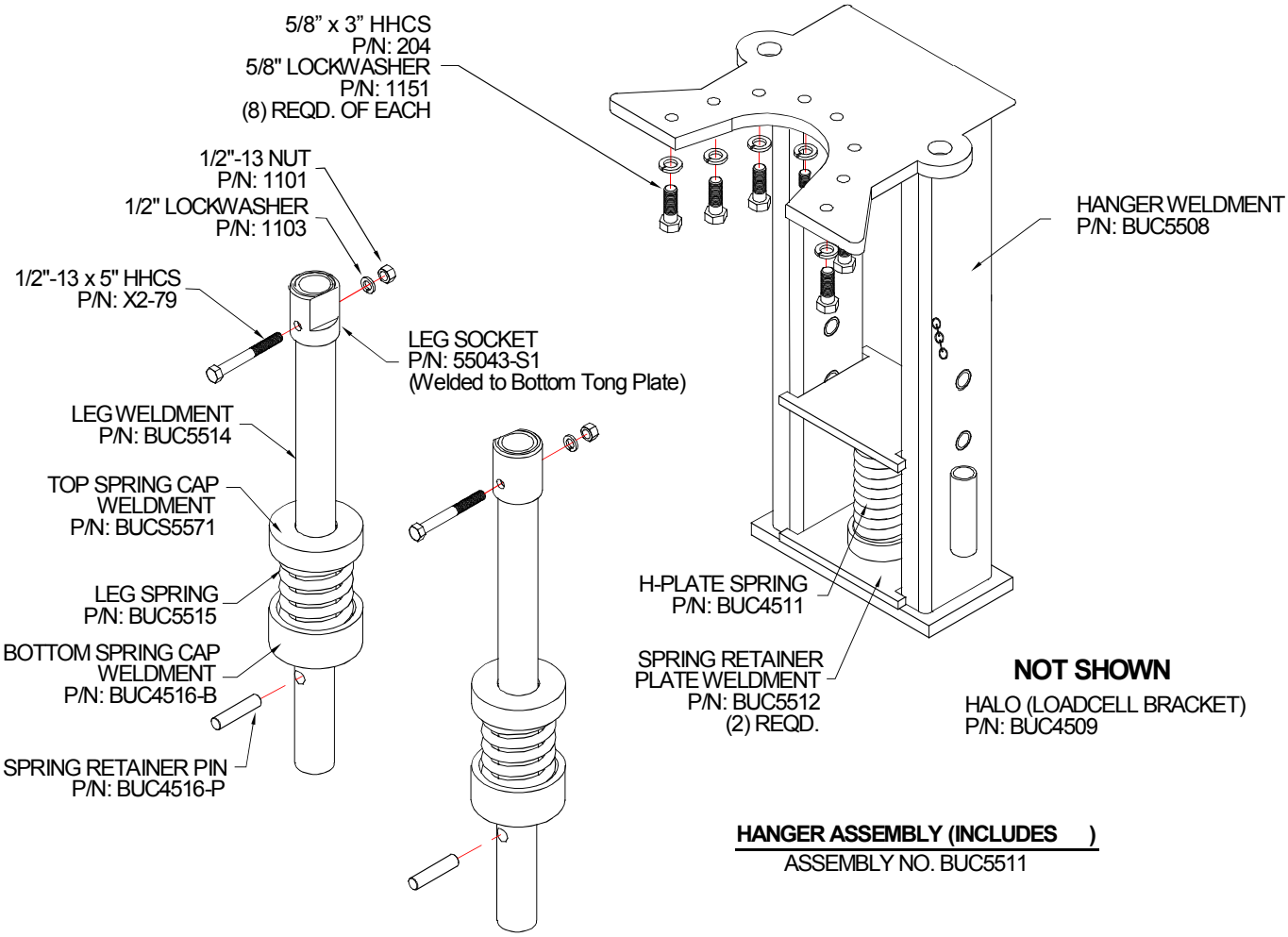
SEE VALVE BANK ASSEMBLY

NOT SHOWN:

6" VALVE ANGLE SUPPORT
P/N: 73002-S3
(Welded to Hanger Plate)

3/8"-16 x 3 3/4" HHCS
P/N: 1072

3/8" LOCKWASHER
P/N: 134 OR 1027
(3) REQD. OF EACH



NOT SHOWN

HALO (LOADCELL BRACKET)
P/N: BUC4509

HANGER ASSEMBLY (INCLUDES)
ASSEMBLY NO. BUC5511

LEG ASSEMBLY (INCLUDES)
ASSEMBLY NO. BUC5570

5 1/2" UHT BACKUP MOUNTING KIT ASSEMBLY

ASSEMBLY NO. MK5500

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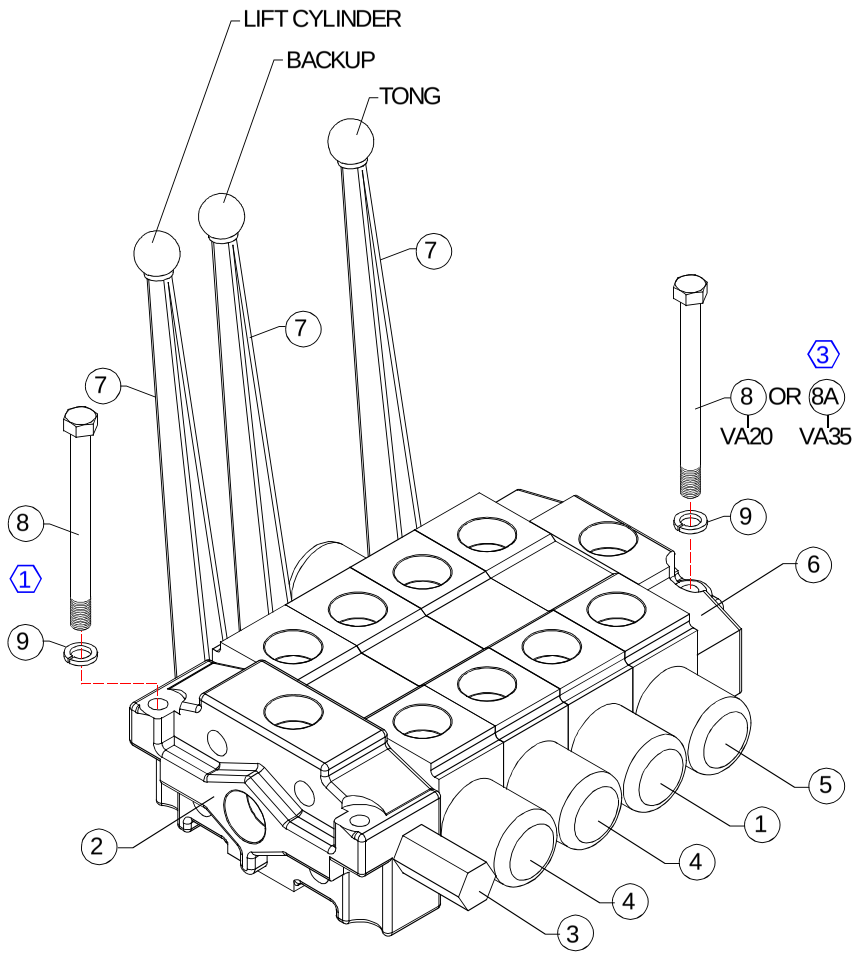
REV. #	LOG #	DATE
1		5/08/09

A20 VALVE BANK ASSEMBLY

Item #	Qty.	Part Number	Description
1	1	55201	CONTROL VALVE ASSEMBLY - MODIFIED VA20-WDA3
			BEFORE 04/15/04
2 OR	1	VA20-MOD	WORK SECTION
			AFTER 04/15/04
2	1	VA20-AA440	INLET VALVE W/O RELIEF
3	1	VA20-MRV-1	RELIEF CARTRIDGE
4	2	VA20-DA3	WORK SECTION
5	1	VA20-MA3	WORK SECTION
6	1	VA20-TR44	OUTLET SECTION
7	3	A20-V1526K-8	A20 8" HANDLE
1 8	3	1072	HHCS 3/8"-16 x 3 3/4" (COMPONENT OF KIT P/N: 4 BANK)
1 9	3	134	LOCKWASHER 3/8" (COMPONENT OF KIT P/N: 4 BANK)

A35 VALVE BANK ASSEMBLY

Item #	Qty.	Part Number	Description
1	1	14213	CONTROL VALVE ASSEMBLY - MODIFIED VA35-WDA4
			BEFORE 04/15/04
2 OR	1	VA35-MOD	WORK SECTION
			AFTER 04/15/04
2	1	VA35-AA440	INLET VALVE W/O RELIEF
3	1	DVG35-HMRV 4	RELIEF CARTRIDGE
4	2	VA35-DA4	WORK SECTION
5	1	VA35-MA4	WORK SECTION
6	1	VA35-TR55	OUTLET SECTION
7	3	A35-V1526K-8	A35 8" HANDLE
1 8	2	X2-40 3	HHCS 1/2"-13 x 4 1/4" 3
3 8A	1	X2-45	HHCS 1/2"-13 x 4 1/2"
1 9 3	3	1103	LOCKWASHER 1/2"



VALVE BANK ASSEMBLY

Rev.	Date	Description
4	08/19/05	Item 3 - Chg.PN from A35-MRV-1 to DVG35-HMRV; ECN#05-0064.
3	12/13/04	Item 8 - Chg. Length from 5" to 4 1/4", PN from X2-79 to X2-40.
		Item 8A - Added Part. Item 9 - Chg. Qty. from 2 to 3.
2	10/21/04	Item 1 - Added VA20-MOD & VA35-MOD for Production after 04/15/04.
1	06/10/02	Item 8 & 9 - Added Part.

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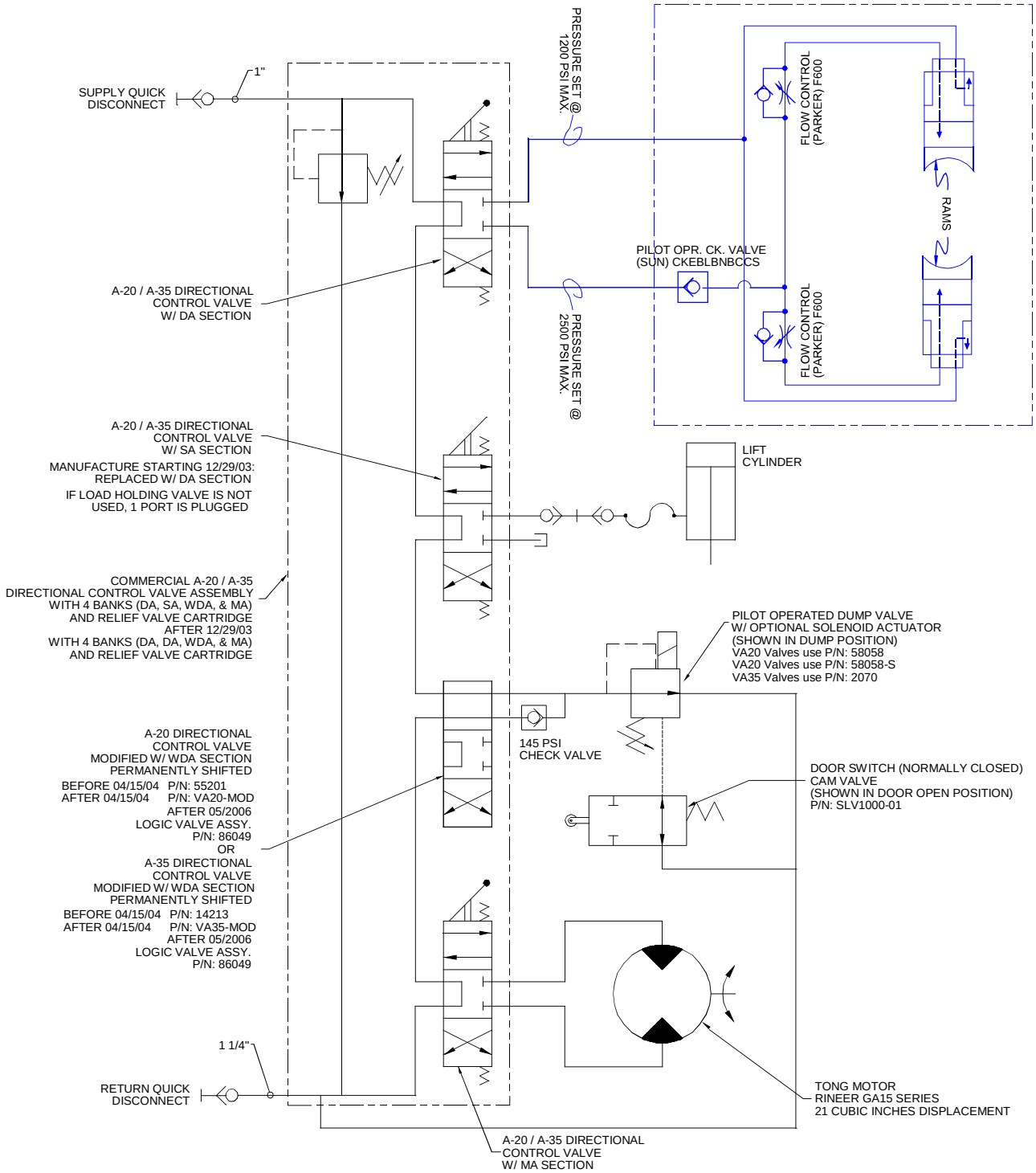
REV. #	LOG #	DATE
4		08/19/05

REF: P:\Manuals\Equip Manuals\Dwgs\Valves\Valve Bank 4 rev4.wpg

UHT TONG **UHT BACKUP**

SPECIAL NOTE: IF VALVE SECTION "COMMERCIAL SHEARING" DA-53 IS TO BE SUBSTITUTED, CYLINDER SPOOL MUST BE USED.


SUPPLY QUICK DISCONNECT
1"
PRESSURE SET @ 1200 PSI MAX.
FLOW CONTROL (PARKER) F600
RAMS
PILOT OPR. CK. VALVE (SUN) CKEBLBNBCCS
FLOW CONTROL (PARKER) F600
PRESSURE SET @ 2500 PSI MAX.
A-20 / A-35 DIRECTIONAL CONTROL VALVE W/ DA SECTION
A-20 / A-35 DIRECTIONAL CONTROL VALVE W/ SA SECTION
MANUFACTURE STARTING 12/29/03: REPLACED W/ DA SECTION
IF LOAD HOLDING VALVE IS NOT USED, 1 PORT IS PLUGGED
LIFT CYLINDER
COMMERCIAL A-20 / A-35 DIRECTIONAL CONTROL VALVE ASSEMBLY WITH 4 BANKS (DA, SA, WDA, & MA) AND RELIEF VALVE CARTRIDGE AFTER 12/29/03 WITH 4 BANKS (DA, DA, WDA, & MA) AND RELIEF VALVE CARTRIDGE
PILOT OPERATED DUMP VALVE W/ OPTIONAL SOLENOID ACTUATOR (SHOWN IN DUMP POSITION) VA20 Valves use P/N: 58058 VA20 Valves use P/N: 58058-S VA35 Valves use P/N: 2070
145 PSI CHECK VALVE
DOOR SWITCH (NORMALLY CLOSED) CAM VALVE (SHOWN IN DOOR OPEN POSITION) P/N: SLV1000-01
A-20 DIRECTIONAL CONTROL VALVE MODIFIED W/ WDA SECTION PERMANENTLY SHIFTED
BEFORE 04/15/04 P/N: 55201
AFTER 04/15/04 P/N: VA20-MOD AFTER 05/2006
LOGIC VALVE ASSY. P/N: 86049
OR
A-35 DIRECTIONAL CONTROL VALVE MODIFIED W/ WDA SECTION PERMANENTLY SHIFTED
BEFORE 04/15/04 P/N: 14213
AFTER 04/15/04 P/N: VA35-MOD AFTER 05/2006
LOGIC VALVE ASSY. P/N: 86049
1 1/4"
RETURN QUICK DISCONNECT
TONG MOTOR RINEER GA15 SERIES 21 CUBIC INCHES DISPLACEMENT
A-20 / A-35 DIRECTIONAL CONTROL VALVE W/ MA SECTION

BASIC HYDRAULIC SCHEMATIC

UHT TONG
UHT BACKUP

NOTE: NUMEROUS FITTINGS, HOSES, & NIPPLES ARE NOT ILLUSTRATED IN THIS SCHEMATIC

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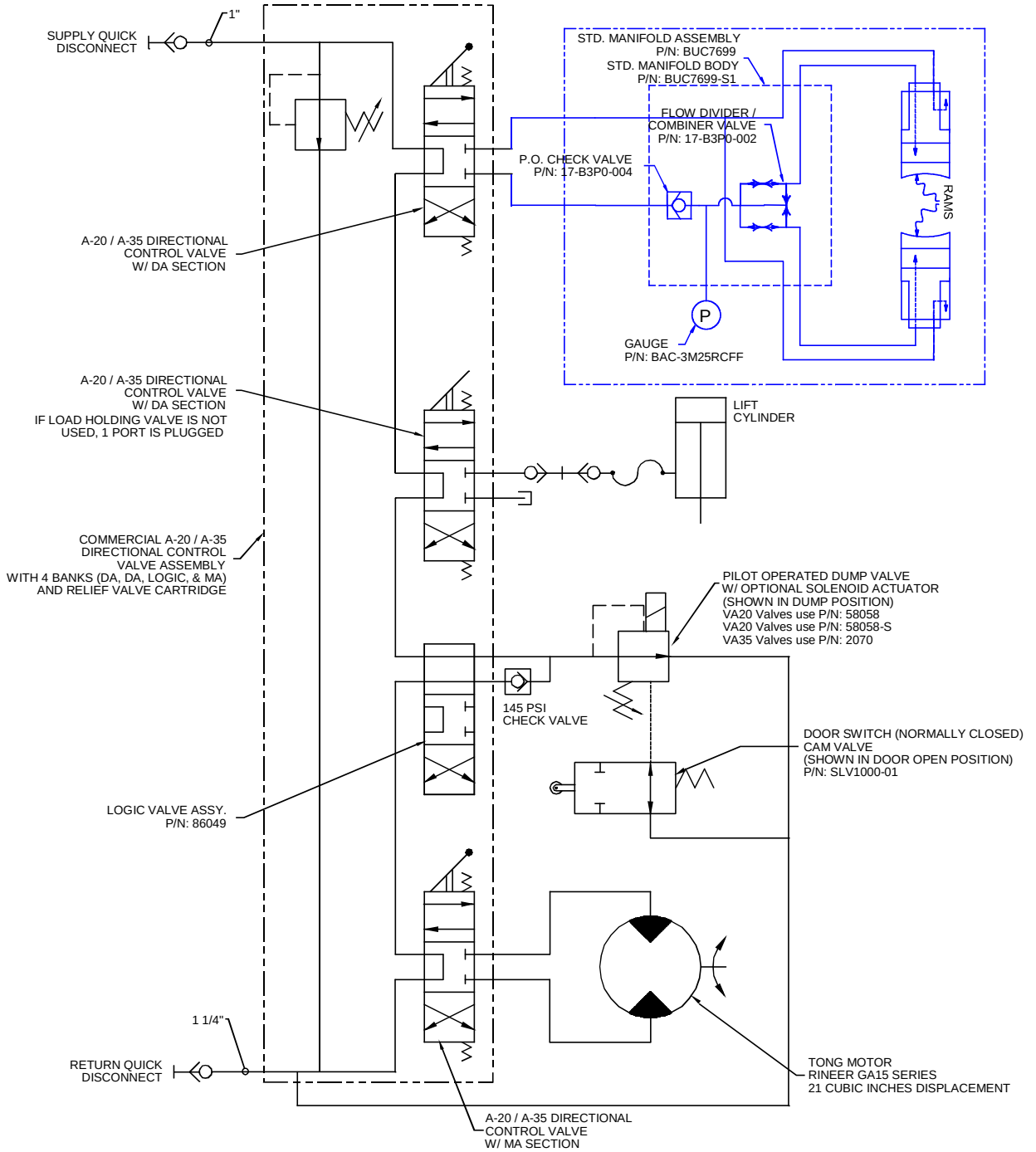
REV. #	LOG #	DATE
4		02/07/08

REF: P:\Manuals\Equip Manuals\Dwgs\BUC5500\Hyd Sch rev4.wpg

UHT TONG **UHT BACKUP**

SPECIAL NOTE: IF VALVE SECTION "COMMERCIAL SHEARING" DA-53 IS TO BE SUBSTITUTED, CYLINDER SPOOL MUST BE USED.


1"
SUPPLY QUICK DISCONNECT
STD. MANIFOLD ASSEMBLY P/N: BUC7699
STD. MANIFOLD BODY P/N: BUC7699-S1
FLOW DIVIDER / COMBINER VALVE P/N: 17-B3P0-002
P.O. CHECK VALVE P/N: 17-B3P0-004
RAMS
A-20 / A-35 DIRECTIONAL CONTROL VALVE W/ DA SECTION
P
GAUGE P/N: BAC-3M25RCFF
A-20 / A-35 DIRECTIONAL CONTROL VALVE W/ DA SECTION IF LOAD HOLDING VALVE IS NOT USED, 1 PORT IS PLUGGED
LIFT CYLINDER
COMMERCIAL A-20 / A-35 DIRECTIONAL CONTROL VALVE ASSEMBLY WITH 4 BANKS (DA, DA, LOGIC, & MA) AND RELIEF VALVE CARTRIDGE
PILOT OPERATED DUMP VALVE W/ OPTIONAL SOLENOID ACTUATOR (SHOWN IN DUMP POSITION) VA20 Valves use P/N: 58058 VA20 Valves use P/N: 58058-S VA35 Valves use P/N: 2070
145 PSI CHECK VALVE
DOOR SWITCH (NORMALLY CLOSED) CAM VALVE (SHOWN IN DOOR OPEN POSITION) P/N: SLV1000-01
LOGIC VALVE ASSY. P/N: 86049
1 1/4"
RETURN QUICK DISCONNECT
TONG MOTOR RINEER GA15 SERIES 21 CUBIC INCHES DISPLACEMENT
A-20 / A-35 DIRECTIONAL CONTROL VALVE W/ MA SECTION

BASIC HYDRAULIC SCHEMATIC

UHT TONG & UHT BACKUP

MANUFACTURE BEGINNING 02/2007

NOTE: NUMEROUS FITTINGS, HOSES, & NIPPLES ARE NOT ILLUSTRATED IN THIS SCHEMATIC

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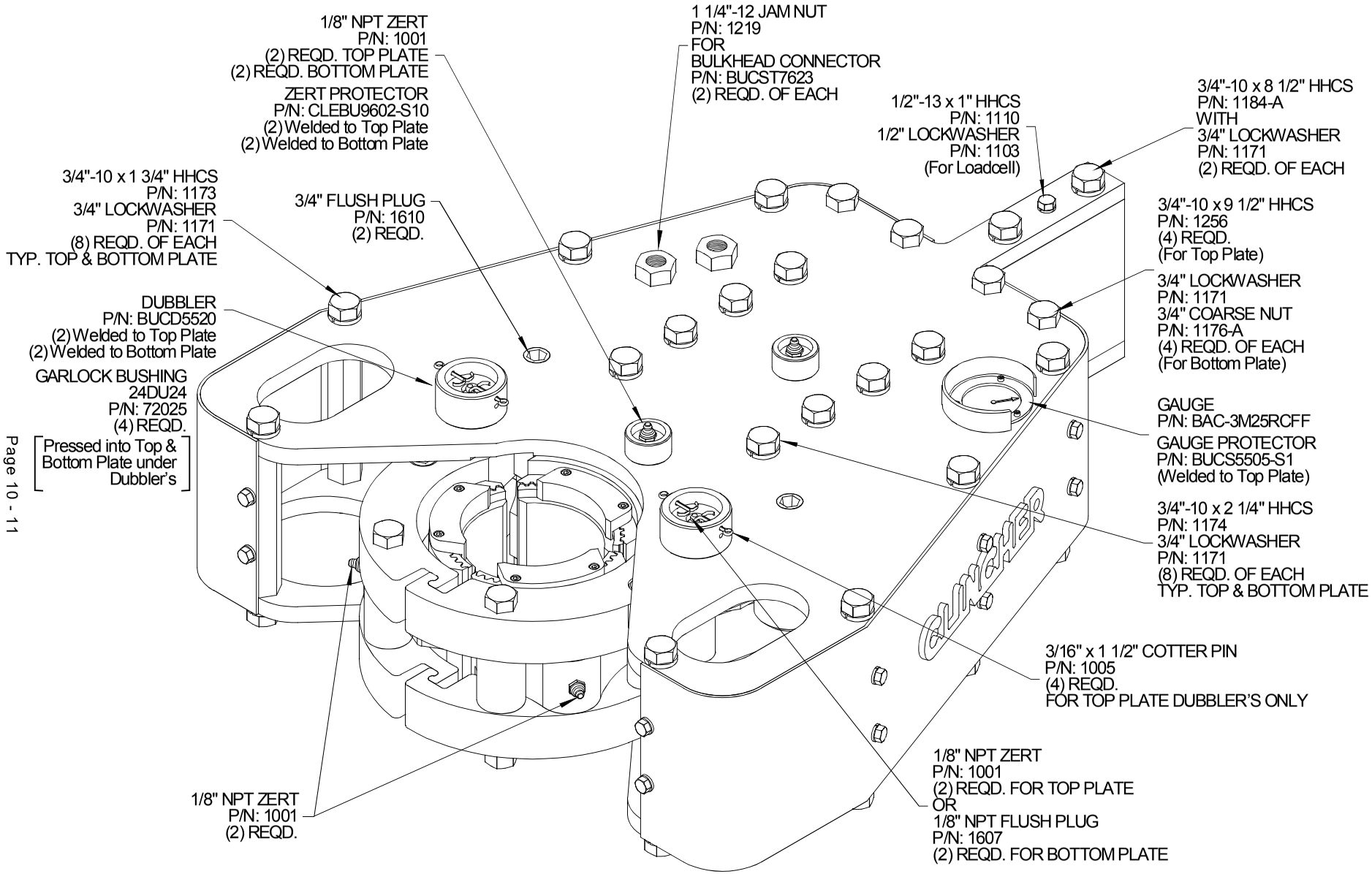
		02/07/08
REV. #	LOG #	DATE

REF: P:\Manuals\Equip Manuals\Dwgs\ BUC5500\HS wManifold.wpg



5 1/2" LOCKJAW™ DRILL PIPE BACKUP

ASSEMBLY NO. BUCD5500

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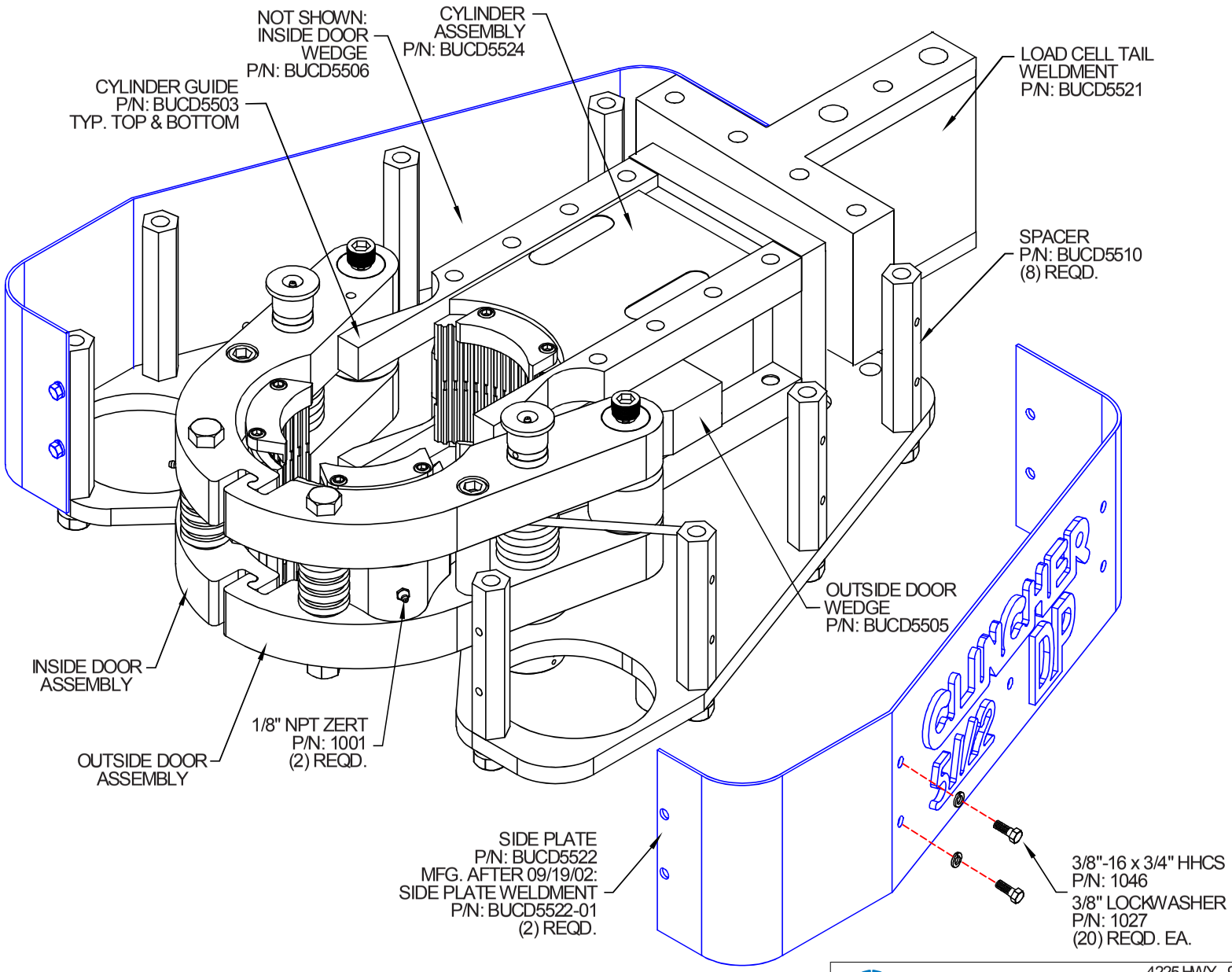
		11/27/01
REV. #	LOG #	DATE

REF: P:\Manuals\Equip Manuals\Dwgs\BUCD5500\Assembly.wpg



5 1/2" LOCKJAW™ DRILL PIPE BACKUP

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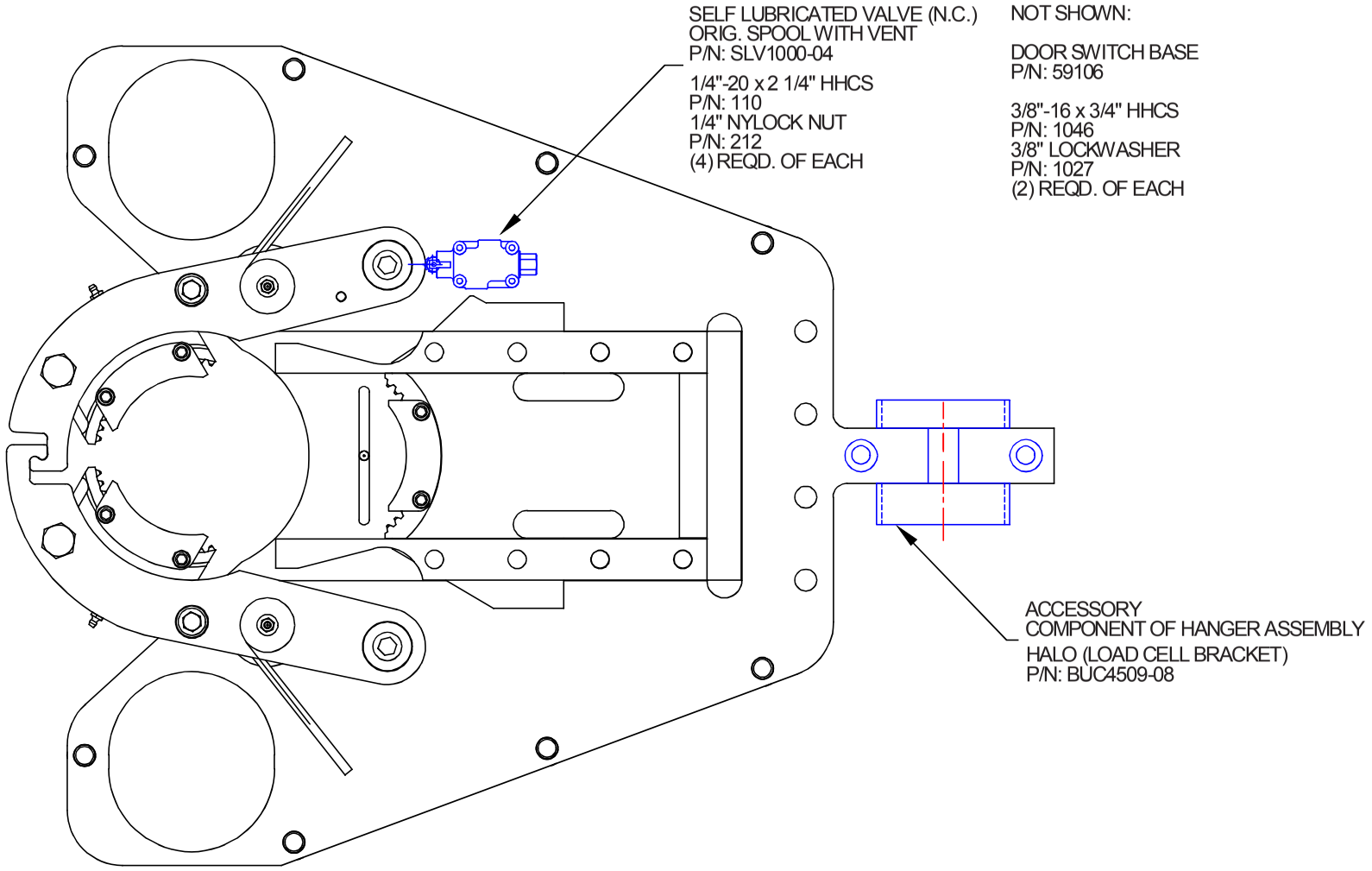
REV. #	LOG #	DATE
2		03/15/07

REF: P:\Manuals\Equip Manuals\Dwgs\BUCD5500\Assy woPlate rev2.wpg



5 1/2" LOCKJAW™ DRILL PIPE BACKUP

TOP VIEW WITHOUT TOP PLATE

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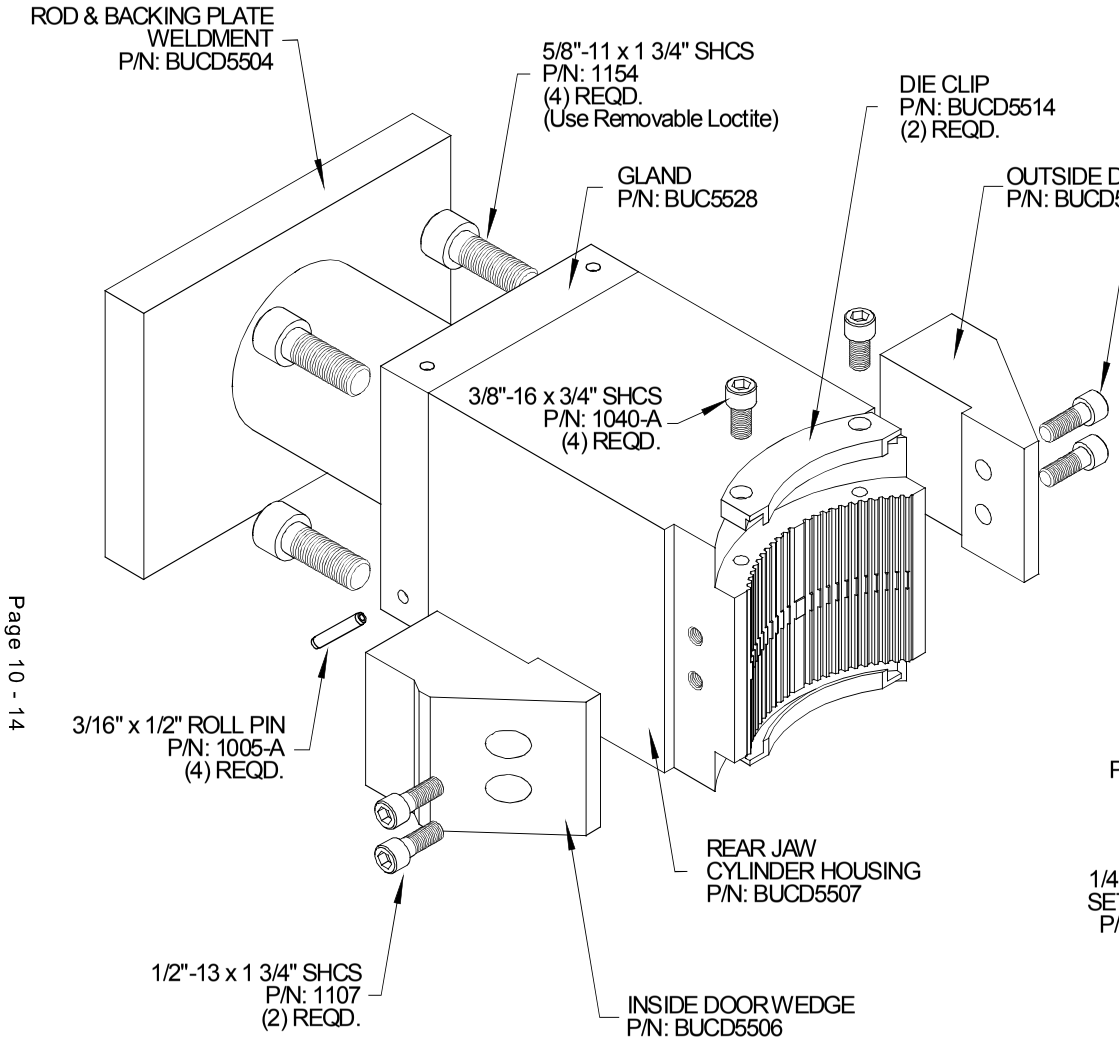
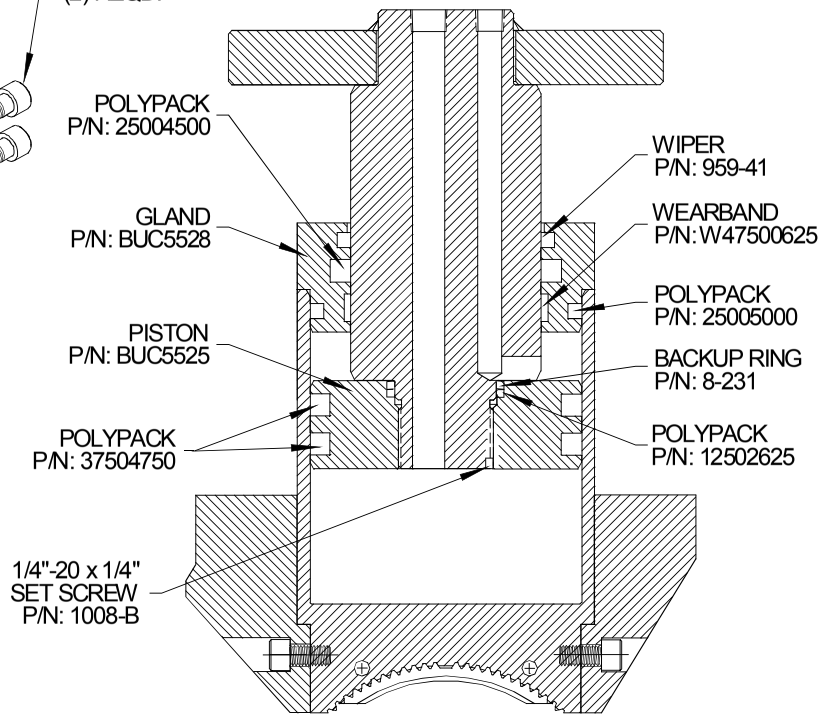
REV. #	LOG #	DATE
2		03/15/07

REF: P:\Manuals\Equip Manuals\Dwgs\BUCD5500\Top View woPlate rev2.wpg





SEAL KIT
P/N: ASAP2226

5 1/2" LOCKJAW™ DRILL PIPE BACKUP

CYLINDER ASSEMBLY

ASSEMBLY NO. BUCD5524

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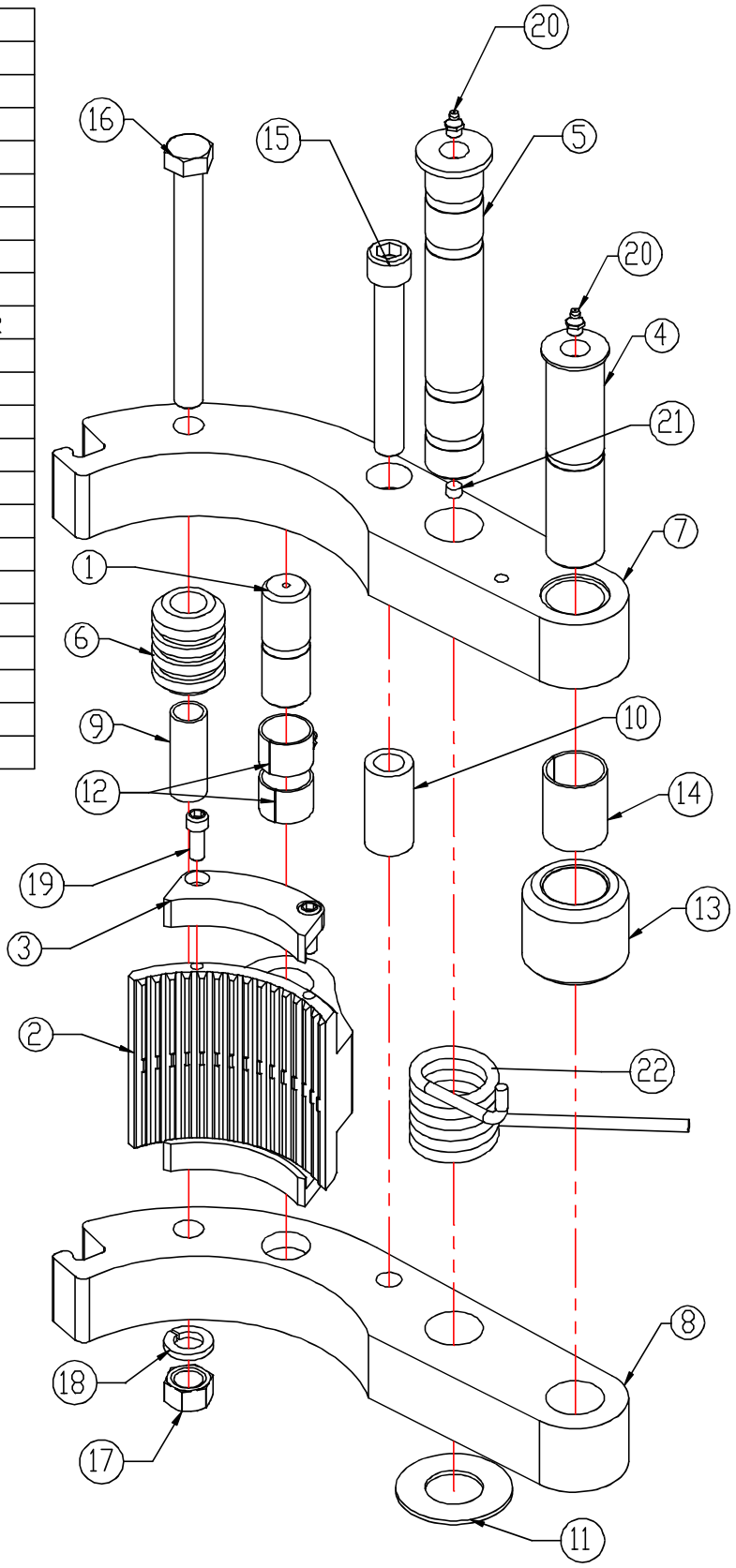
REV. #	LOG #	DATE
1		03/16/07

REF: P:\Manuals\Equip Manuals\Dwgs\BUCD5500\BUCD5524 Cyl rev1.wpg

Item #	Qty.	Part Number	Part Name
1	1	bucd5511	INSERT PIN
2	1	BUCD5513	PIVOTING INSERT
3	2	BUCD5514	DIE CLIP
4	1	BUCD5515	ROLLER PIN
5	1	BUCD5516	PIVOT PIN
6	1	BUCD5523-01	GROOVED DOOR SPRING
7	1	BUCD5517	INSIDE DOOR TOP PLATE
8	1	bucd5518	INSIDE DOOR BOTTOM PLATE
9	1	BUCD5541	FRONT DOOR SPRING SPACER
10	1	BUCDP8509	DOOR SPACER
11	1	2025	TONG DOOR THRUST SPACER
12	2	20DU16	DU BEARING 1 1/4" X 1"
13	1	BUCD5519	DOOR ROLLER
14	1	BUCS4027	DU BEARING 1 1/2" X 2"
15	1	1177-A	3/4"-10 X 5 1/2" SHCS
16	1	1255	HHCS 3/4"-10 X 7 1/2"
17	1	1176-A	3/4" GR. 8 NUT
18	1	1171	3/4" LOCKWASHER
19	4	1041	3/8-16x1 1/4 SHCS
20	3	1001	1/8 NPT ZERT
21	1	1607	1/8" FLUSH PLUG
22	1	BUCD5525	TORSION SPRING



INSIDE DOOR ASSEMBLY

ASSEMBLY NO. BUCD5536

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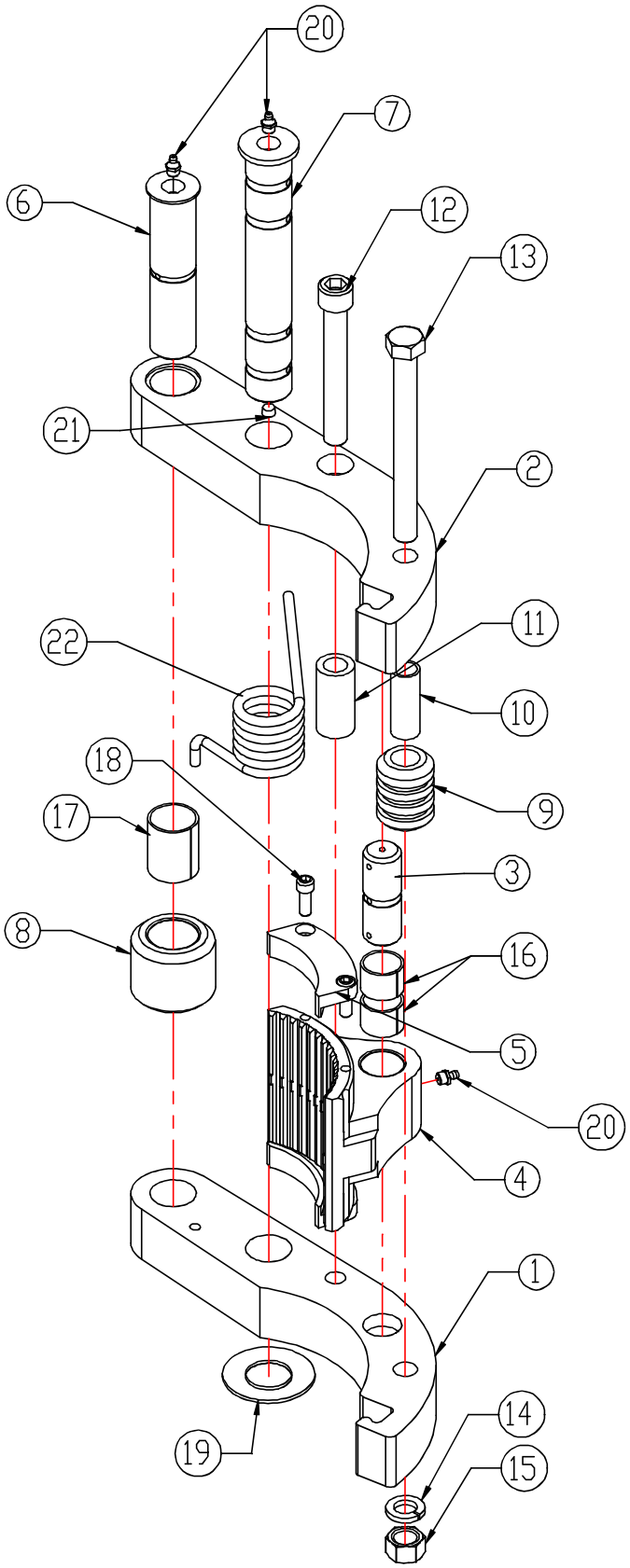
REV. #	LOG #	DATE
		03/19/07

REF: P:\Manuals\Equip Manuals\Dwgs\BUCDT5500\BUCD5536 Door I.wpg



Item #	Qty.	Part Number	Part Name
1	1	bucd5501	OUTSIDE DOOR BOTTOM PLATE
2	1	BUCD5502	OUTSIDE DOOR TOP PLATE
3	1	bucd5511	INSERT PIN
4	1	BUCD5513	PIVOTING INSERT
5	2	BUCD5514	DIE CLIP
6	1	BUCD5515	ROLLER PIN
7	1	BUCD5516	PIVOT PIN
8	1	BUCD5519	DOOR ROLLER
9	1	BUCD5523-01	GROOVED DOOR SPRING
10	1	BUCD5541	FRONT DOOR SPRING SPACER
11	1	BUCDP8509	DOOR SPACER
12	1	1177-A	3/4"-10 X 5 1/2" SHCS
13	1	1255	HHCS 3/4"-10 X 7 1/2"
14	1	1171	3/4" LOCKWASHER
15	1	1176-A	3/4" GR. 8 NUT
16	2	20DU16	DU BEARING 1 1/4" X 1"
17	1	BUCS4027	DU BEARING 1 1/2" X 2"
18	4	1041	3/8-16x1 1/4 SHCS
19	1	2025	TONG DOOR THRUST SPACER
20	3	1001	1/8 NPT ZERT
21	1	1607	1/8" FLUSH PLUG
22	1	BUCD5525	TORSION SPRING

OUTSIDE DOOR ASSEMBLY

ASSEMBLY NO. BUCD5535

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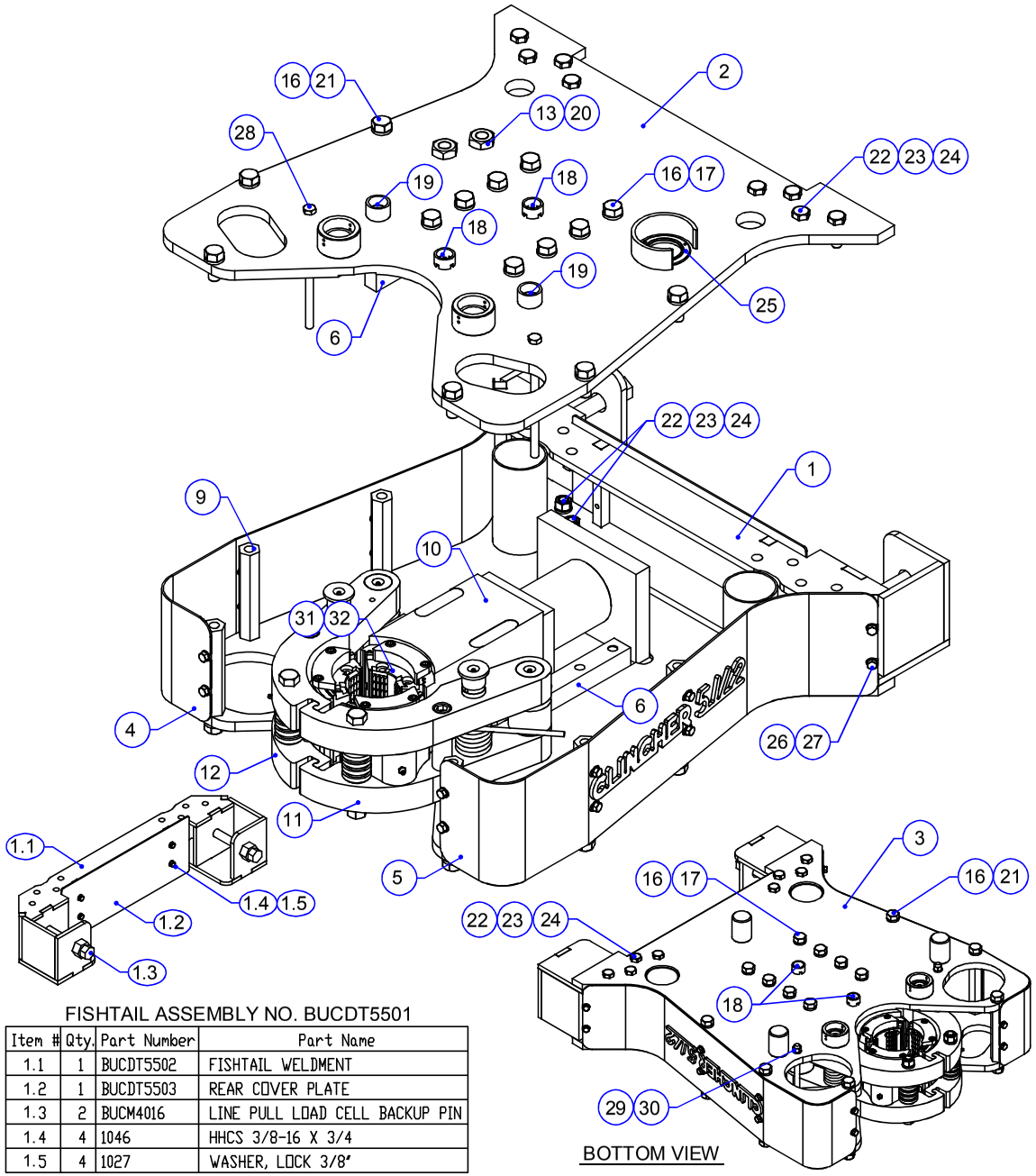
		03/16/07
REV. #	LOG #	DATE

REF: P:\Manuals\Equip Manuals\Dwgs\BUCDT5500\BUCD5535 Door O.wpg



FISHTAIL ASSEMBLY NO. BUCDT5501

Item #	Qty.	Part Number	Part Name
1.1	1	BUCDT5502	FISHTAIL WELDMENT
1.2	1	BUCDT5503	REAR COVER PLATE
1.3	2	BUCM4016	LINE PULL LOAD CELL BACKUP PIN
1.4	4	1046	HHCS 3/8-16 X 3/4
1.5	4	1027	WASHER, LOCK 3/8"

Item #	Qty.	Part Number	Part Name
1	1	BUCDT5501	FISHTAIL ASSEMBLY
2	1	BUCDT5504	TOP PLATE WELDMENT
3	1	BUCDT5505	BOTTOM PLATE WELDMENT
4	1	BUCDT5506L	LEFT COVER WELDMENT
5	1	BUCDT5506R	RIGHT COVER WELDMENT
6	4	BUCD5503	CYLINDER GUIDE
7	1	BUCD5505	OUTSIDE DOOR WEDGE
8	1	BUCD5506	INSIDE DOOR WEDGE
9	6	BUCD5510	SPACER COLUMN
10	1	BUCD5524	CYLINDER ASSEMBLY
11	1	BUCD5535	OUTSIDE DOOR ASSEMBLY
12	1	BUCD5536	INSIDE DOOR ASSEMBLY
13	2	BUCST7623	BULKHEAD CONNECTOR
14	2	1107	1/2"-13 X 1 3/4" SHCS
15	2	1106-A	1/2"-13 X 1 1/2" SHCS
16	28	1171	3/4" LOCKWASHER
17	16	1174	3/4"-10 X 2 1/4" HHCS
18	4	1001	1/8 NPT ZERT
19	2	1610	3/4 NPT FLUSH PLUG
20	2	1219	1 1/4"-12 JAMNUT
21	12	1173	3/4"-10 x 1 3/4" HHCS
22	16	1160	5/8-11 x 2 HHCS
23	16	194	5/8-11 NC NUT
24	16	1151	5/8 LW
25	1	BAC-3M25RCFF	GAUGE
26	18	1027	WASHER, LOCK 3/8"
27	18	1046	HHCS 3/8-16 X 3/4
28	2	1122	HHCS 1/2"-13 X 9" GR8
29	2	1103	1/2" LOCKWASHER
30	2	1101	NUT, HEX, 1/2-13
31	3	3.625	5 1/2" UHT X 3 5/8" DT DIE ADAPTER
32	6	DTI1601	1/2 x 1 1/4 x 3 7/8 DOVETAIL INSERT
33	1	59106	DOOR SWITCH BASE
34	1	SLV1000-04	N.C. CAM VALVE ASSEMBLY
35	4	110	1/4"-20 x 2 1/4" HHCS
36	4	212	1/4" NYLOCK NUT

NOT SHOWN IN THIS ILLUSTRATION
NOT A COMPONENT OF BUCDT5500

5 1/2" LOCKJAW™ DRILL PIPE BACKUP

ASSEMBLY NO. BUCDT5500

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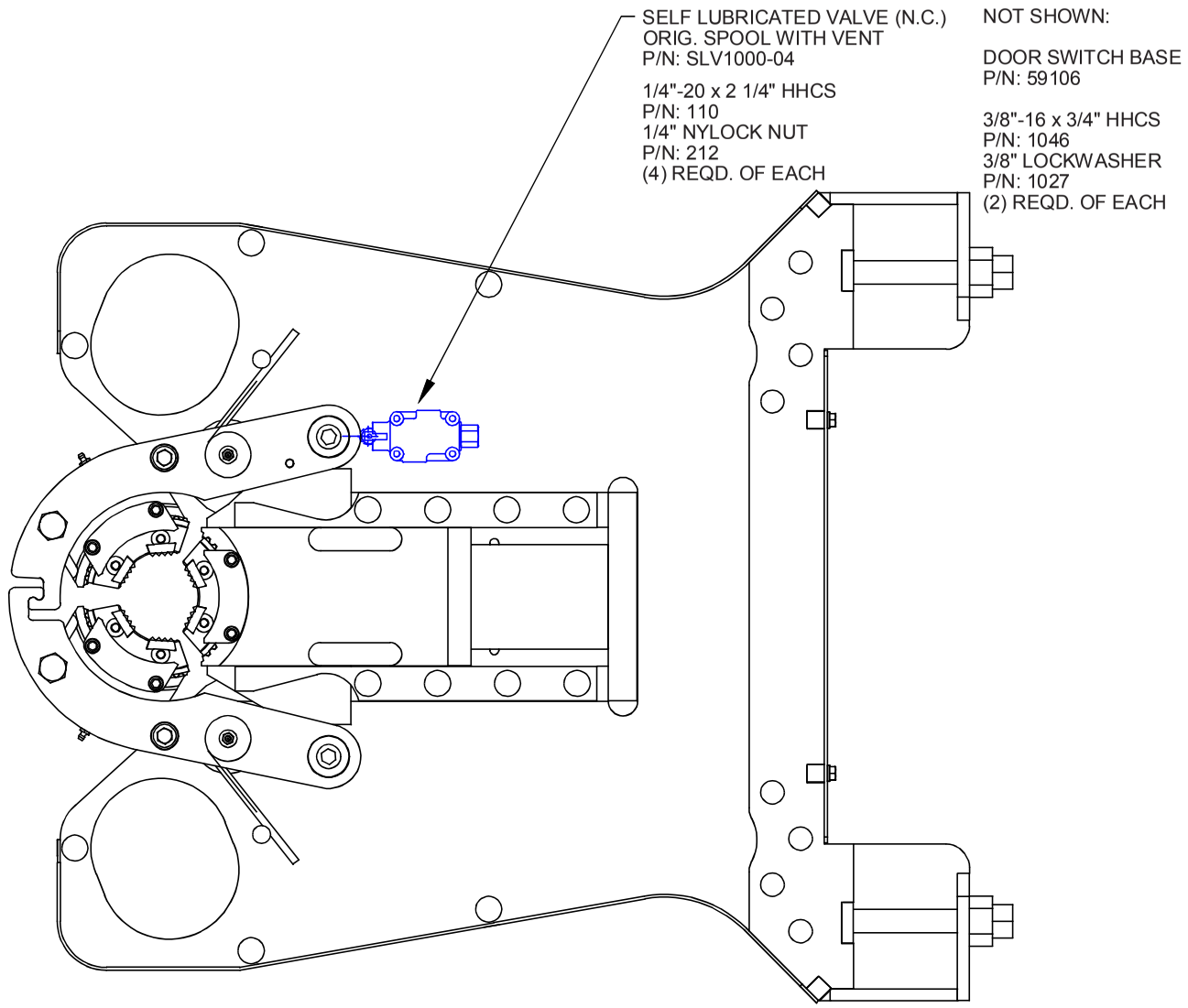
REV. #	LOG #	03/16/07 DATE

REF: P:\Manuals\Equip Manuals\Dwgs\BUCDT5500\Assembly.wpg



5 1/2" LOCKJAW™ DRILL PIPE BACKUP

TOP VIEW WITHOUT TOP PLATE

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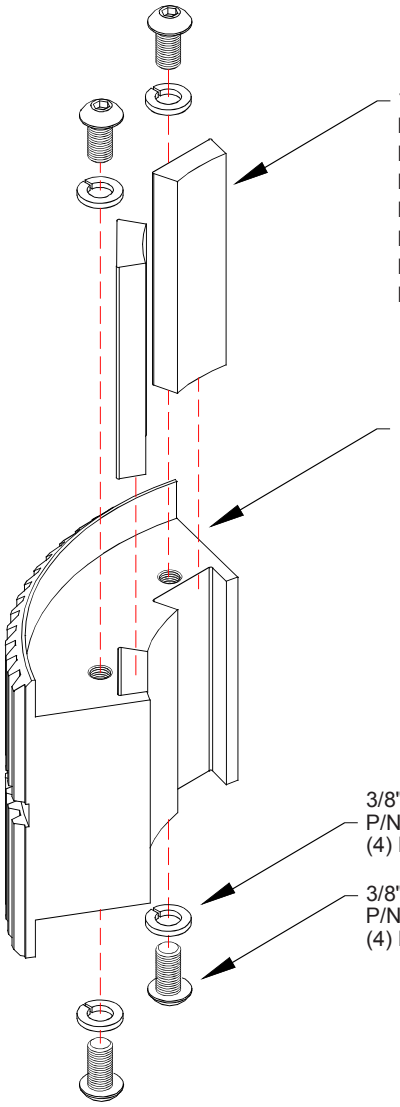
		03/21/07
REV. #	LOG #	DATE

REF: P:\Manuals\Equip Manuals\Dwgs\BUCDT5500\Top View woPlate.wpg



1 1/4" x 3 7/8" DOVETAIL STRIP DIES
DTI1601 - 1/2" Thick
DTI1601D - 1/2" Thick Diamond
DTI1622 - 9/16" Thick
DTI1632 - 5/8" Thick
DTI1642 - 11/16" Thick
DTI1661 - 13/16" Thick
DTI1662 - 1 1/4" Thick

DOVETAIL DIE ADAPTERS

P/N: BUDT55-02375	2 3/8"	P/N: BUDT55-04125	4 1/8"
P/N: BUDT55-02875	2 7/8"	P/N: BUDT55-04250	4 1/4"
P/N: BUDT55-03125	3 1/8"	P/N: BUDT55-04500	4 1/2"
P/N: BUDT55-03375	3 3/8"	P/N: BUDT55-04750	4 3/4"
P/N: BUDT55-03500	3 1/2"	P/N: BUDT55-04875	4 7/8"
P/N: BUDT55-03625	3 5/8"	P/N: BUDT55-05000	5"
P/N: BUDT55-03750	3 3/4"	P/N: BUDT55-05125	5 1/8"
P/N: BUDT55-03875	3 7/8"	P/N: BUDT55-05250	5 1/4"
P/N: BUDT55-04000	4"	P/N: BUCX55005500	5 1/2"

3/8" LOCKWASHER
P/N: 134
(4) REQD.

3/8"-16 x 3/4" BUTTON HEAD CSX
P/N: 1061
(4) REQD.

5 1/2" LOCKJAW™ DRILL PIPE BACKUP DOVETAIL DIE ADAPTER

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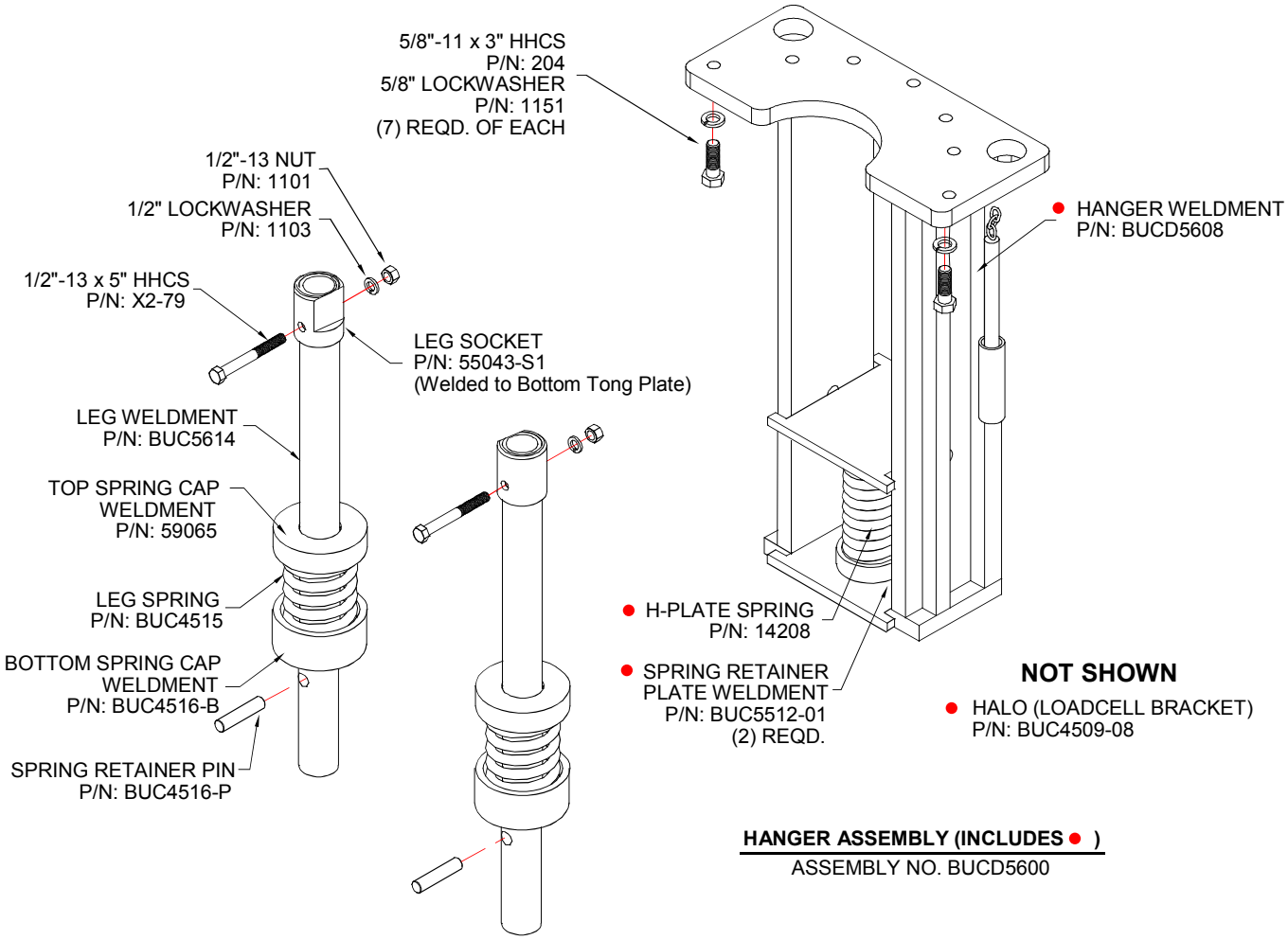
REV. #	LOG #	DATE
1		01/18/08

REF: P:\Manuals\Equip Manuals\Dwgs\BUCD5500\Die Adapter DT rev1.wpg



LEG ASSEMBLY (INCLUDES)

ASSEMBLY NO. BUC5570-01

HANGER ASSEMBLY (INCLUDES ●)

ASSEMBLY NO. BUCD5600

5 1/2" LOCKJAW™ DP BACKUP MOUNTING KIT ASSEMBLY

ASSEMBLY NO. MK5550

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REV. #	LOG #	DATE
2		04/29/03

REF: P:\Manuals\Equip Manuals\Dwgs\BUCD5500\Mounting Kit rev2.wpg

BUCT5512

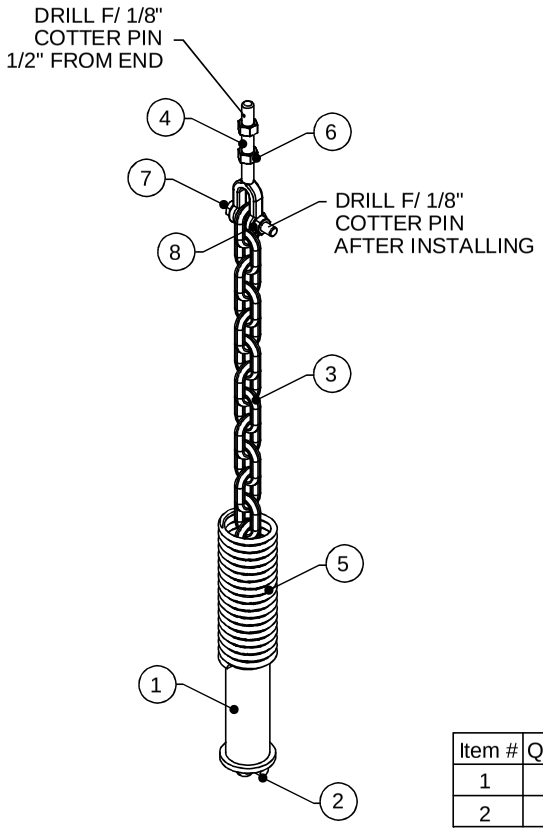
Item #	Qty.	Part Number	Part Name
1	1	BUCT5509	REAR SPRING SUPPORT
2	1	BUCT5510	REAR SPRING CHAIN RETAINER
3	1	BUCT5511	REAR SPRING CHAIN
4	1	BUCT5513	1/2 x 6 TURNBUCKLE - JAW END
5	1	SMH1501-U	COMPRESSION SPRING
6	2	1101	1/2"-13 NUT
7	1	159	7/16"-14 x 2 1/4" HHCS
8	1	292	7/16"-14 NYLOCK NUT

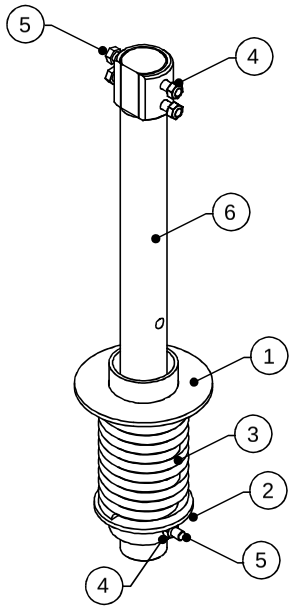
BUCT5501

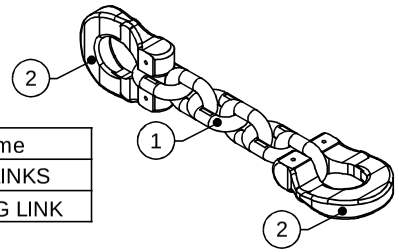
Item #	Qty.	Part Number	Part Name
1	1	BUCT5502	TOP SPRING CAP WELDMENT
2	1	BUCT5503	BOTTOM SPRING CAP WELDMENT
3	1	BUCT5507	COMPRESSION SPRING
4	3	1087	1/2"-13 NYLOCK NUT
5	3	X2-45	1/2"-13 x 4 1/2" HHCS
6	1	BUCT5514	TONG LEG WELDMENT

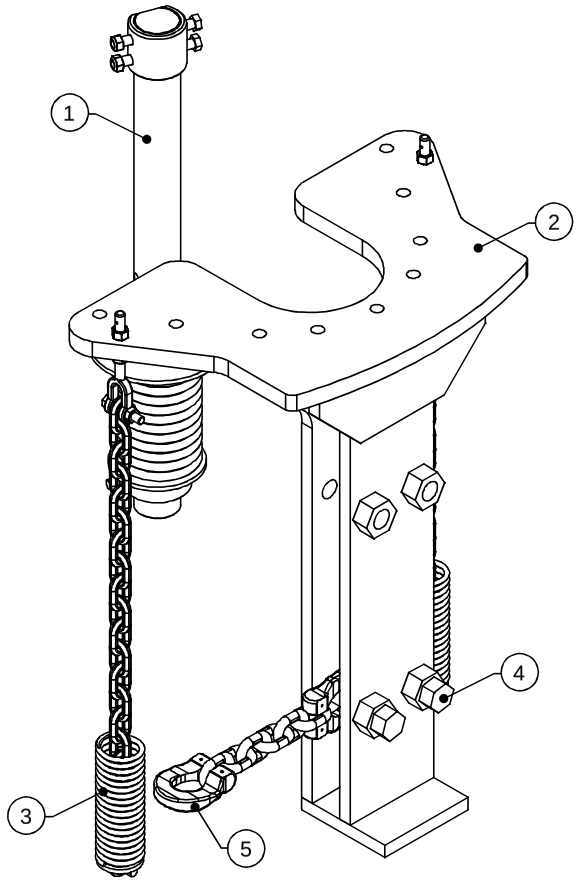
MKBUCT5500

Item #	Qty.	Part Number	Part Name
1	2	BUCT5501	TONG LEG ASSEMBLY
2	1	BUCT5508	TENSION STYLE HANGER
3	2	BUCT5512	REAR SPRING HANGER ASSEMBLY
4	2	BUCM4017	LOADCELL CENTER PIN
5	1	BUCT7635	BREAK OUT CHAIN ASSEMBLY









BUCT7635

Item #	Qty.	Part Number	Part Name
1	1	BUCT7637	1/2" CHAIN 6 LINKS
2	2	BUCT7638	1/2" COUPLING LINK

TENSION STYLE BACKUP MOUNTING KIT ASSEMBLY

ASSEMBLY NO. MKBUCT5500

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		11/08/05
REV. #	LOG #	DATE

REF: P:\Manuals\Equip Manuals\Dwgs\BUCT6250Mounting Kit.wpg

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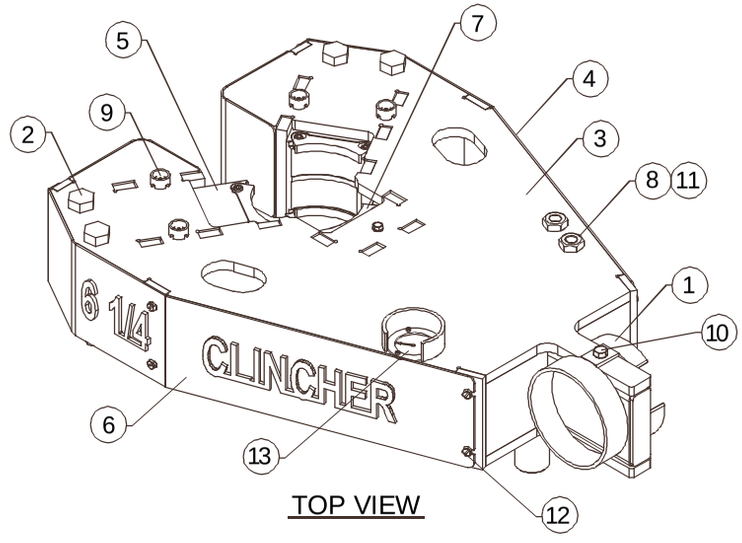
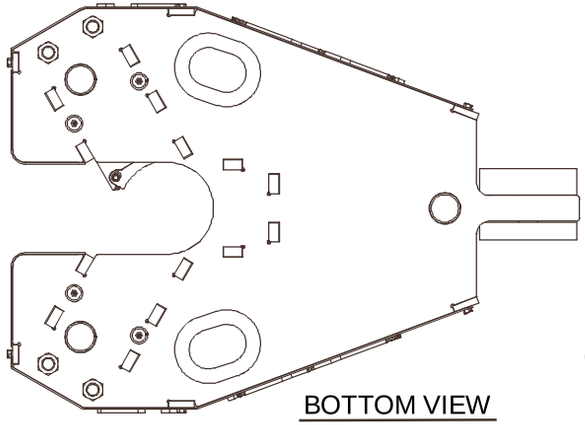
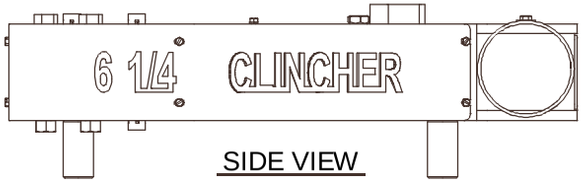
Item	Qty.	Part Number	Description
1	1	BUC4509-08	LOAD CELL BRACKET
2	4	BUC5556	BACKING BOLT
3	1	BUC6201	BACKUP BODY WELDMENT
4	1	BUC6202	FRONT/SIDE COVER #1
5	2	BUC6204	CYLINDER ASSEMBLY
6	1	BUC6207	FRONT/SIDE COVER #2
7	1	BUC7632	CENTER JAW ASSEMBLY
8	2	BUCST7623	BULKHEAD CONNECTOR
9	8	1001	1/8" NPT ZERT
10	1	1110	1/2"-13 x 1" HHCS
11	2	1219	1 1/4"-12 JAM NUT
12	12	1308	3/8"-16 x 3/4" HHCS SLOTTED SELF THR.
13	1	BAC-3M25RCFF	GAUGE



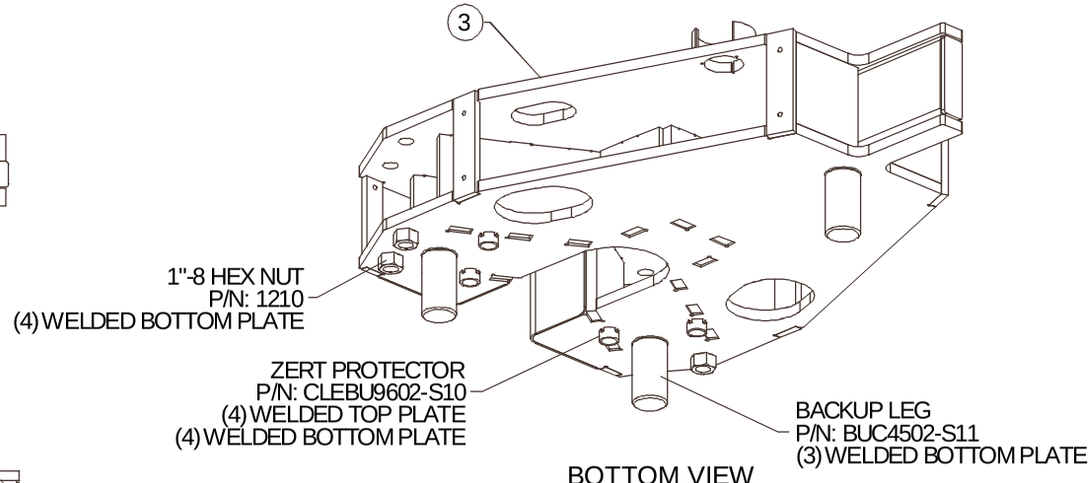
TOP VIEW



BOTTOM VIEW



SIDE VIEW



BOTTOM VIEW

6 1/4" UHT BACKUP

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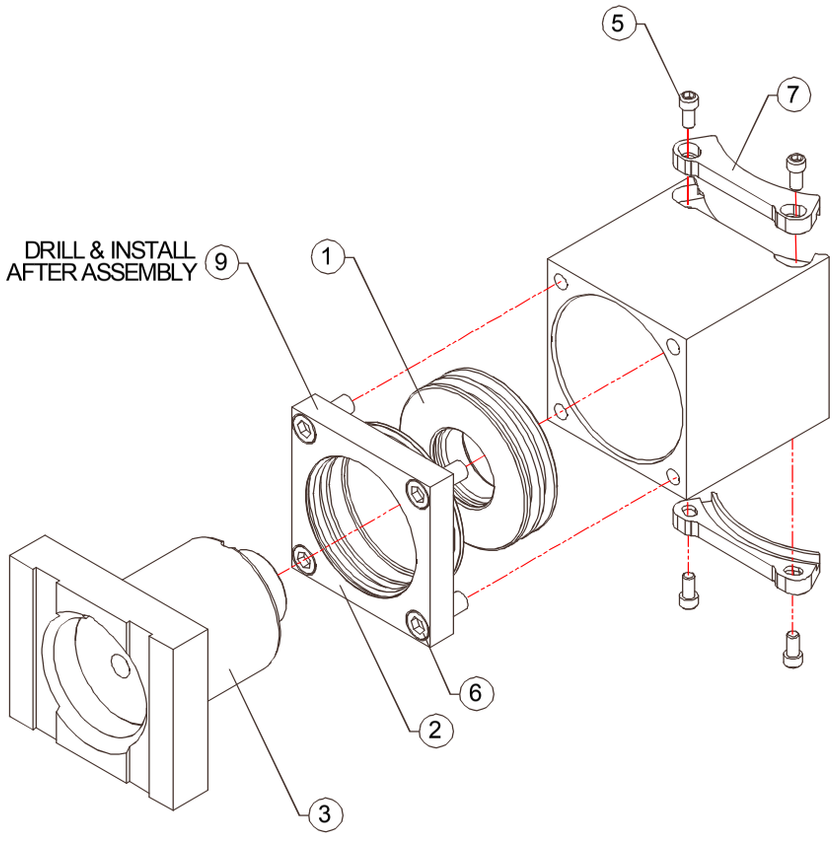
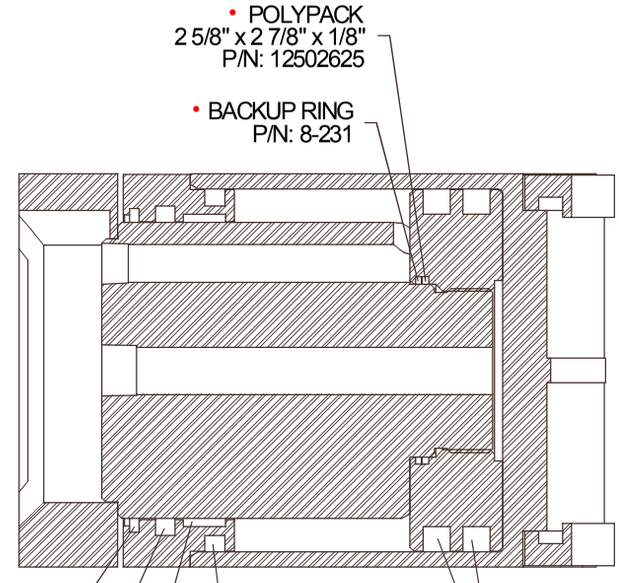
		04/29/03
REV. #	LOG #	DATE
REF: S:\Equip Manuals\Dwgs\BUC6250\Assembly.wpg		



Item	Qty.	Part Number	Description
1	1	BUC5525	PISTON
2	1	BUC5528	GLAND
3	1	BUC6205	ROD WELDMENT
4	1	BUC6206	CYLINDER HOUSING
5	4	1040-A	3/8"-16 x 3/4" SHCS
6	4	256	5/8"-11 x 1 1/4" SHCS
7	2	CM7656-01	DIE RETAINER CLIP
• 8	1	ASAP2226	SEAL KIT
9	4	1011-B	1/8" x 1 1/4" ROLL PIN



ACCEPTS DIES:

BUC7625XXXX
BUCA7625XXXX
BB7625XXXX

CYLINDER ASSEMBLY

ASSEMBLY NO. BUC6204

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		04/30/03
REV. #	LOG #	DATE

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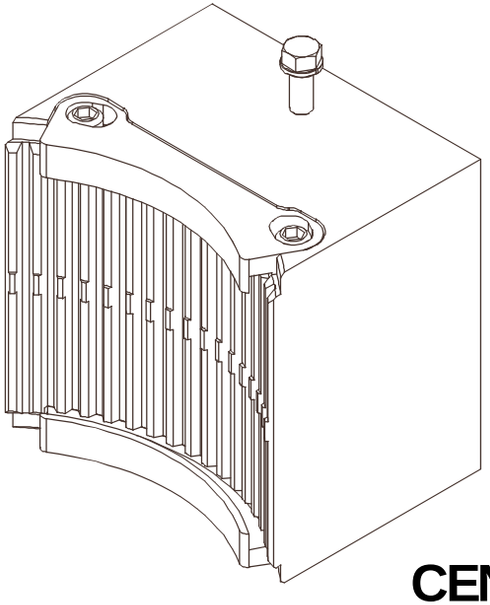
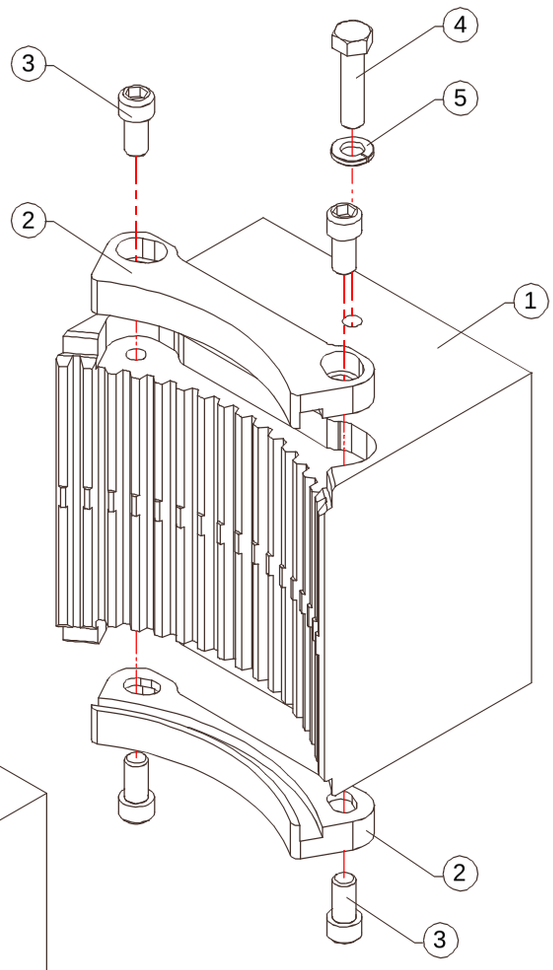




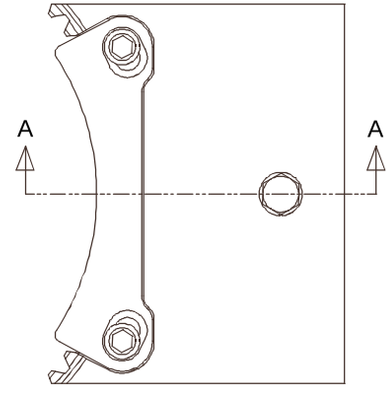
ACCEPTS DIES:

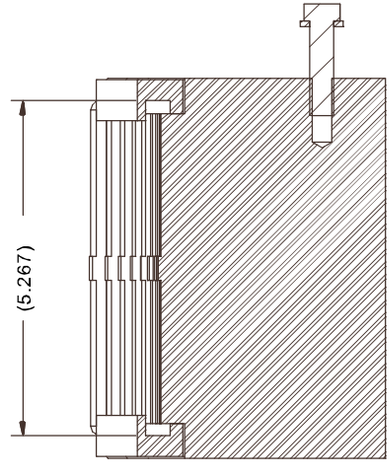
BUC7625XXXX
BUCA7625XXXX
BB7625XXXX

CENTER JAW ASSEMBLY

ASSEMBLY NO. BUC7632

Item	Qty.	Part Number	Description
1	1	BUC7619-02	CENTER JAW
2	2	CM7656-01	DIE RETAINER CLIP
3	4	1040-A	3/8"-16 x 3/4" SHCS
4	1	1049	3/8"-16 x 1 1/2" HHCS
5	1	1027	3/8" LOCKWASHER





SECTION A-A

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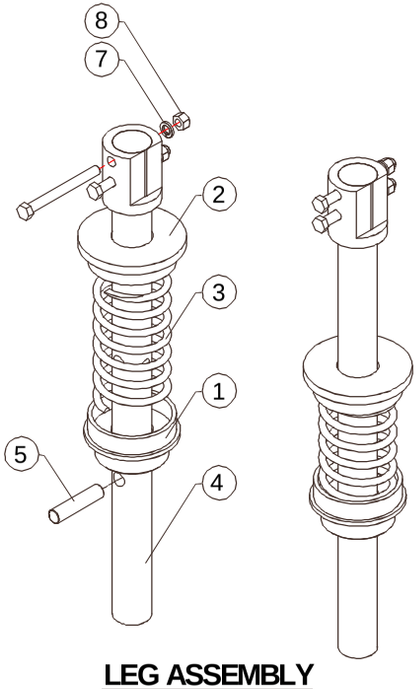
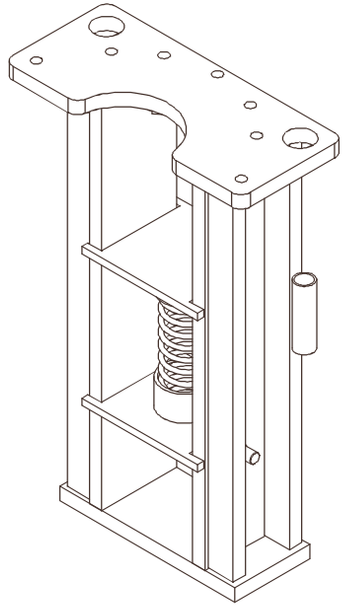
		04/30/03
REV. #	LOG #	DATE

REF: S:\Equip Manuals\Dwgs\BUC6250\Center Jaw.wpg

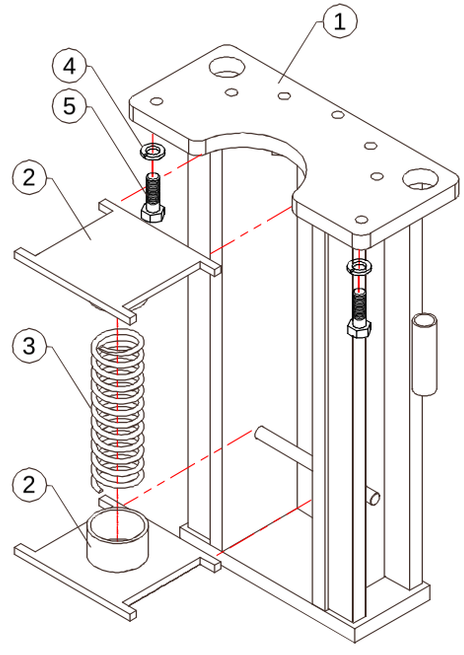
Item	Qty.	Part Number	Description
1	1	BUC4516-B	BOTTOM SPRING CAP
2	1	59065	TOP SPRING CAP
3	1	BUC5515	LEG SPRING
4	1	BUC6271	TONG LEG WELDMENT
5	1	BUC4516-P	SPRING RETAINER PIN
6	2	X2-79	1/2"-13 x 5" HHCS
7	2	1103	1/2" LOCKWASHER
8	2	1101	1/2"-13 HEX NUT



LEG ASSEMBLY
ASSEMBLY NO. BUC6270
(2) REQD.



Item	Qty.	Part Number	Description
1	1	BUCD5608	HANGER WELDMENT
2	2	BUC6210	H-PLATE WELDMENT
3	1	BUC4515	LEG SPRING
4	7	1151	5/8" LOCKWASHER
5	7	204	5/8"-11 x 3" HHCS



HANGER ASSEMBLY
ASSEMBLY NO. BUC6260

6 1/4" UHT BACKUP MOUNTING KIT ASSEMBLY

ASSEMBLY NO. MK6250

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		04/30/03
REV. #	LOG #	DATE

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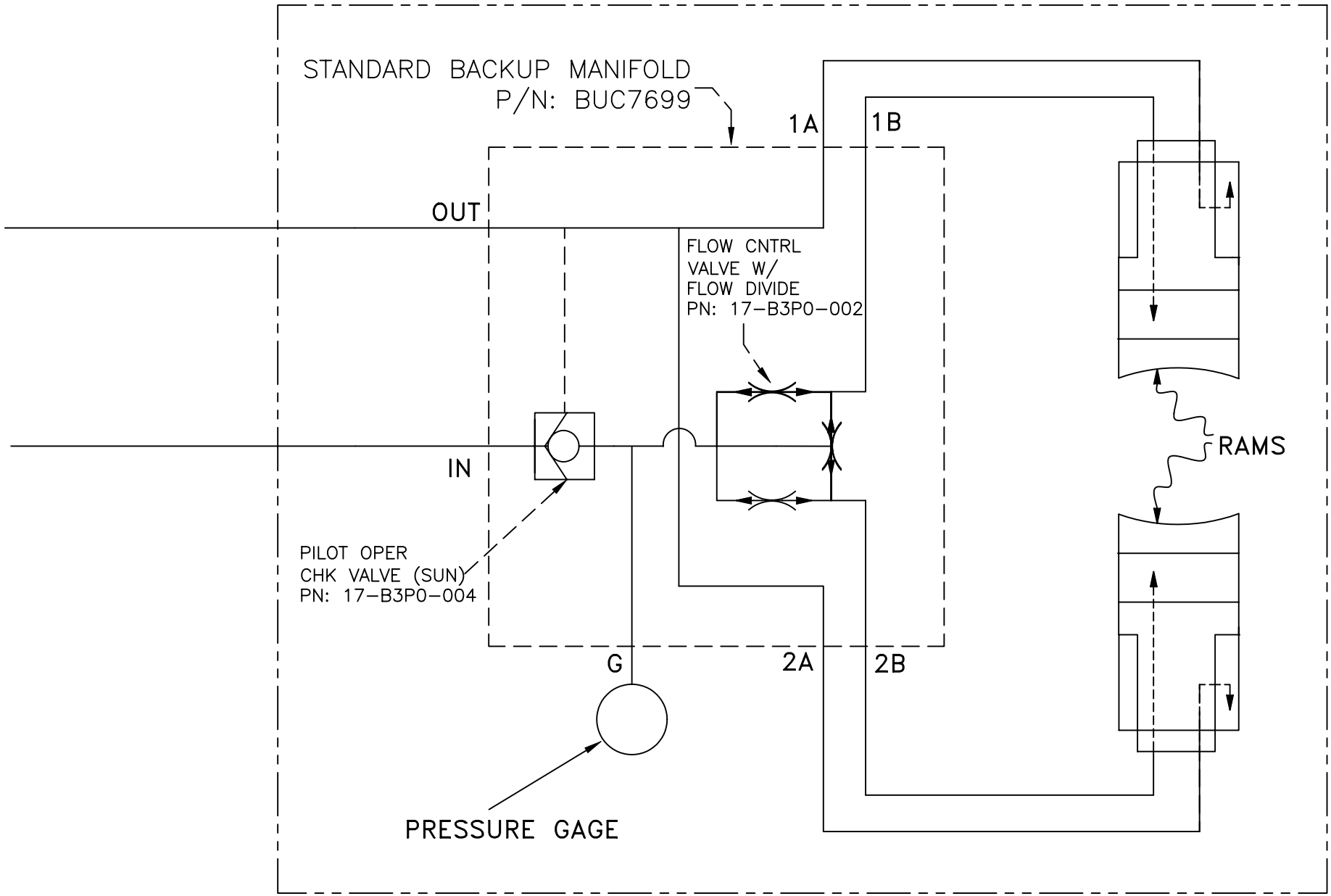

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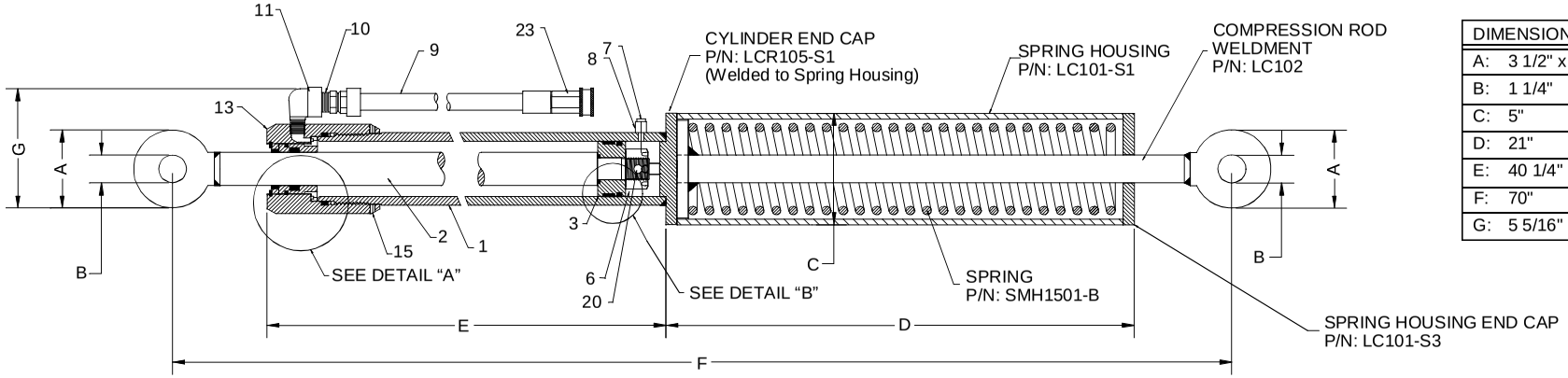
REV. #	LOG #	DATE
		04/30/03

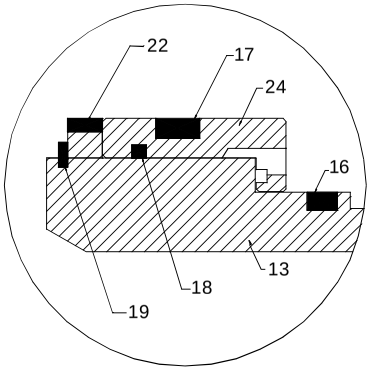


DIMENSIONAL DATA
A: 3 1/2" x 3/4"
B: 1 1/4"
C: 5"
D: 21"
E: 40 1/4"
F: 70"
G: 5 5/16"

★ SEAL KIT P/N: ASAP100

BILL OF MATERIALS

	Item	Qty.	Description	P/N
	1	1	HYD/AIR CYLINDER BARREL	LCR105
	2	1	CYLINDER ROD WELDMENT	LCR112
	3	1	PISTON	LCR106
★	4	1	WEARBAND	W25000500
★	5	1	POLYPACK 2 1/8" x 2 1/2" x 3/16"	18702125
	6	1	1"-12 SLOTTED HEX NUT	1209
	7	1	1/2" FLUSH PLUG W/ 1/8" ORIFICE	1657
	8	1	1/2" HALF COLLAR	1380
	9	1	1/2" x 120" HOSE ASSY. MNPT x FJIC SWVL	LCR107-A
	10	1	3/8" MNPT x 1/2" MJIC ADAPTER	1466
	11	1	3/8" STREET EL W/ORIFICE	LCR109
	12	---	----------	----------
	13	1	GLAND CAP	LCR119
	14	---	----------	----------
	15	2	1/4"-20 x 3/8" SET SCREW	1015
★	16	1	O RING 2 7/8"ID, 3 1/4"OD, 3/16"W	2-336
★	17	1	POLYPACK 1 1/2" x 1 7/8" x 3/8"	18701500-375
★	18	1	O RING 2"ID, 2 1/4"OD, 1/8"W	2-226
	19	1	INTERNAL SNAP RING (N-1300-225)	1947
	20	1	1/4" x 1 1/2" ROLL PIN	1008-A
★	21	1	O RING 1"ID, 1 1/4"OD, 1/8"W	2-214
★	22	1	SEAL NP CR14938	CR14938
	23	1	QUICK DISCONNECT 1/2" FEMALE SNAPTITE	1430
	24	1	GLAND	LCR113



DETAIL "A"
SCALE: 3X

SPECIFICATIONS - B

MAXIMUM SPRING TRAVEL (PRELOAD TO SOLID) ..... 5.510 in.

MAXIMUM ALLOWABLE LOAD (SPRING FULLY COMPRESSED) ..... 2.854 lbs.

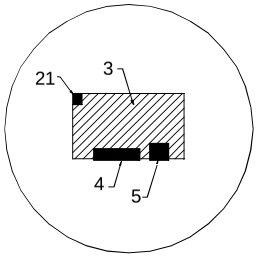
PRESSURE REQUIRED TO LIFT MAXIMUM ALLOWABLE LOAD ..... 909 psi

MAXIMUM ALLOWABLE INTERNAL PRESSURE ..... 3,000 psi

CYLINDER I.D. ..... 2.50 in.

ROD O.D. ..... 1.50 in.

STROKE ..... 34.94 in.



DETAIL "B"
SCALE: 3X

LIFT CYLINDER ASSEMBLY

ASSEMBLY NUMBER LCR100-B

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REV. #	LOG #	DATE
1		04/19/02

REF: P:\Manuals\Equip Manuals\Dwgs\LCR\LCR100-B rev1.wpg

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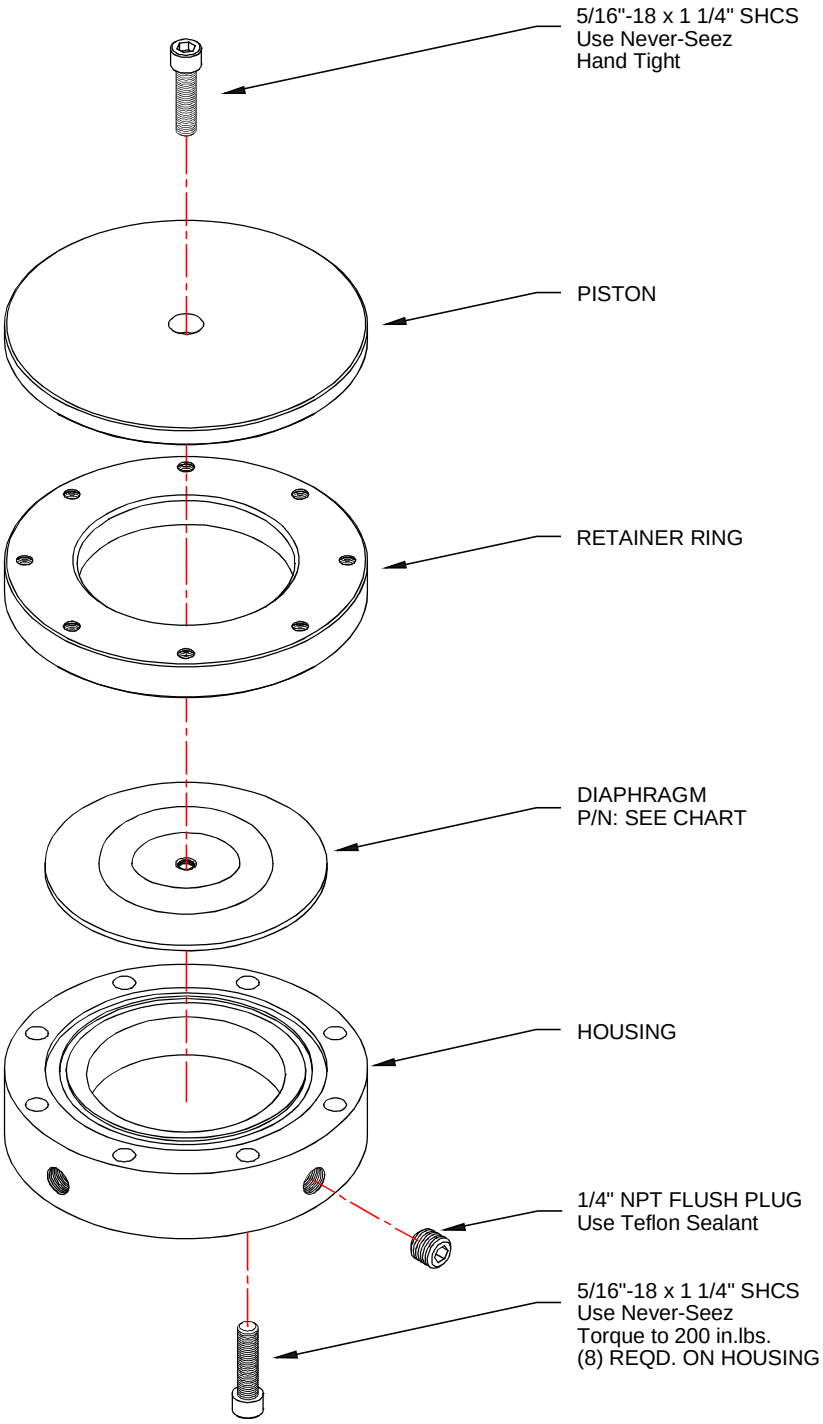
CLINCHER® LOAD CELL AND TORQUE GAUGE ASSEMBLIES

The **CLINCHER®** Tong and Backup are available in versions which accommodate compression load cells or tension style load cells. All information contained in this Technical Manual refers to products which utilize compression load cells. Contact SUPERIOR for information concerning products using tension load cells.

Part Number	SM25-31-C for BUC5500 SM25-28-C for BUCD5500 & BUC6250
Torque Rating	25,000 ft lbs
Handle Length	31 inches for BUC5500 28 inches for BUCD5500 & BUC6250
Loadcell Type	Compression
Loadcell Manufacturer	SUPERIOR MANUFACTURING & HYDRAULICS
Loadcell Part Number	CLC200
Torque Gauge Mfr.	TOTCO or equivalent
Torque Gauge Size	6"
Gauge Mount	“L” Bracket
Hose Length	6 ft.
Assembly Documentation	Calibration Certificate

CLINCHER® Load cells and Torque Gauges are produced by several manufacturers. The information provided by MD TOTCO or Acadiana Oilfield Instruments may not be applicable to all torque gauges or load cells. This reference information is provided with the permission of MD TOTCO and Acadiana Oilfield Instruments.



LOAD CELL SIZE	DIAPHRAGM P/N
6.44 SQ.IN.	CLC203
8.0 SQ.IN.	CLC205
12.0 SQ.IN.	CLC206
16.1 SQ.IN.	CLC207
25.0 SQ.IN.	CLC208

COMPRESSION LOAD CELL

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847

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REV. #	LOG #	DATE

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CLINCHER® LOAD CELL AND TORQUE GAUGE ASSEMBLIES

To request copy of Compression Torque System Technical Manual, please contact:

Superior Manufacturing & Hydraulics
4225 Hwy. 90 East
Broussard, LA 70518
Phone: 337-837-8847
Fax: 337-837-8839
www.superior-manf.com

SECTION 13 MOTOR SERVICE MANUALS

To request copy of Rineer Motor Service Manuals, please contact:

Superior Manufacturing & Hydraulics
4225 Hwy. 90 East
Broussard, LA 70518
Phone: 337-837-8847
Fax: 337-837-8839
www.superior-manf.com

SECTION 14 VALVE TECHNICAL DATA

To request copy of Valve Technical Data, please contact:

Superior Manufacturing & Hydraulics
4225 Hwy. 90 East
Broussard, LA 70518
Phone: 337-837-8847
Fax: 337-837-8839
www.superior-manf.com